

BOOK OF ABSTRACTS

4th REGIONAL HELIX

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WELCOME MESSAGE

Regional Entrepreneurial Ecosystems and Sustainability – Rethinking the Helix

In an increasingly global and feverish economy, regional cartography is not always sufficiently documented and discussed. At the same time, the narrative “trial-mistake” is often discouraged, considering that when success emerges one should hide hypothetical errors. In a scenario, in which the new industry paradigms and value-adding processes require a critical reflection on the sustainability of entrepreneurial ecosystems and on the relations between firms, governments, society and the processes of knowledge creation emerges the 4th International congress of Regional Helix, under the topic “*Regional Entrepreneurial Ecosystems and Sustainability - Rethinking the Helix*”.

Since its creation, the Regional Helix conference emphasizes the importance of cooperation and this edition is no exception and it results from a joint organization between the School of Technology and Management of the Polytechnic of Porto, through its research center (CIICESI), of the Polytechnic Institute of Castelo Branco, NECE (research center of the Department of Economics and Management of the University of Beira Interior) and University of Trás os Montes and Alto Douro.

The participation of several researchers from national and international institutions is an important step in the achievement of these aims. We are pleased to welcome colleagues from countries across the globe. We believe that this multiplicity reflects the interest that regional entrepreneurial ecosystems and sustainability issues have transversely across the world.

Finally, we would like to call your attention to the several publication opportunities that Regional Helix 2019 bring to you, and we invite all colleagues to submit their papers for the publications that better fit their research.

Welcome to the fourth edition of Regional Helix!

Vítor Braga & Marisa Roriz Ferreira
Chair and Co-Chair of the Organizing Committee



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4th
HELIX'19

27th June

PARALLEL SESSION 1**THE MODERATING EFFECTS OF ECONOMIC DEVELOPMENT ON INNOVATION AND SHADOW ENTREPRENEURSHIP: GREY OR PINK?****Eunice Santos**

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Extended Abstract

Informal entrepreneurship, in addition to being a generalised phenomenon, incorporates a large variety of labels as regards what constitutes this concept: black, grey, irregular or shadow entrepreneurship, among others. The phenomenon is present to a greater or lesser extent in every country around the world, irrespective of their predominant economic systems and levels of development (Slonimczyk 2014, Petersen, 1982; Schneider 2005; Williams and Nadin 2010; Welter et al., 2015). According to Elbahnasawy et al. (2016), informal entrepreneurship, also termed “shadow entrepreneurship”, has attracted increasing attention from both politicians and researchers in recent years. This focus stems from its impact on the broad expanse of economic and social development, especially in developing countries where it has been more closely analysed. We hereby accept that informal entrepreneurship fosters the inefficient usage of scarce resources, encourages the adoption of low return technologies and only small scale production, distorting investment and worsening income inequalities (Blackburn, Bose, & Capasso, 2012). Furthermore, this dimension inputs bias into the macroeconomic indicators such as consumption, expenditure, the labour force and the unemployment rate as well as distorting the real economic conditions (Capasso & Jappelli, 2013). Consequently, monetary and fiscal policies may become less effective as they are based on economic data that are not generally reliable (Schneider & Enste, 2000). In recent years, various researchers have dedicated considerable efforts to understanding the causes and effects of informal entrepreneurship (Tanzi 1982; Schneider and Enste 2000; Gerxhani 2004; Schneider 2011). However, the majority of studies on informal entrepreneurship throw their spotlight on public finances (such as the fiscal load and the social contributions) and/or the facets of public governance and administration (intensity, regulations and public sector services, for example), which may drive the decisions of economic actors to begin participating in the informal economy (Friedman, Johnson, Kaufmann, & Zoido-Lobaton, 2000; Schneider & Enste, 2000). Considering a series of drivers for informal national economies and their macroeconomic influences, there are still other aspects that are less well understood and worthy of further research, such as investment in innovation and R&D (Dreher, Kotsogiannis, & McCorrison, 2009; Blackburn et al., 2012; Terjesen et al. 2013; Goel and Goktepe-Hultén 2013; Acs et al. 2014; Audretsch et al. 2014; Goel et al., 2015). Within the scope of studying the impact of innovation on informal entrepreneurship, there has been a range of different approaches but that have returned hitherto inconclusive findings with the debate having focused essentially on the capacities of informal entrepreneurs in terms of new product innovation (Mhone 1996, Wakandigara 1999, Mararike 2001, Mushipe 2007). ATPSN (2010) affirms that innovation requires recognition as the key to facilitating the transition from emerging economies towards more developed and industrialised economies (Thandlana, 2005; Otsuka and Kdirajan, 2005; Manyati, 2013). Innovation has itself gained recognition in the macroeconomic literature as an important driver of economic development (Grossman and Helpman, 1991; Manyati 2013, 2014; Manyati 2013, 2014). Hence, our research question here is: What is the effect of economic development on innovation and informal entrepreneurship?

Fagerberg et al. (2010) identify two factors as critical to the endogenous growth model: the adoption of technologies developed in other parts of the globe and the local capacity for innovation. However, technology, its diffusion and adoption by economies undergoing transitions towards economic development are all costly and conditioned by the factors inherently supporting such processes (Keller, 2004). This thus depends on substantial and well-focused technological efforts (Lall, 1992), sufficient human and financial resources and the prevailing absorption capacities (Cohen and Levinthal, 1989; Keller, 1996). Hence, we may state that research into informal entrepreneurship, and specifically into its impact on innovation, is more modest while on an upwards trend (Williams 2006; Webb et al. 2009; Williams and Nadin 2010; Williams and Nadin, 2011a,b; Estrin and Mickiewicz 2012; Webb et al., 2013; Autio and Fu, 2015). The objective of our research is to ascertain to what extent innovation activities influence the expansion or retraction of informal entrepreneurship. Hence, our focus here falls on the effects of innovation on informal entrepreneurship, comparing the relative effects of informal entrepreneurship versus the overall economy as well as comparing the level of economic development with the level of informal entrepreneurship. We may consider that innovation opens new opportunities to informal entrepreneurs and this research seeks to formally study such effects and compare them with the effects of innovation in the informal economy. This research contributes to the literature across three important facets. Firstly, despite the existing research on the impacts of entrepreneurship and innovation to economic development, there has been a lack of study on their impacts on informal entrepreneurship. This research complements the existing literature by taking into consideration a set of auxiliary variables at the level of innovation activities and thereby taking into account not only the innovation capacity but also investment in R&D in conjunction with the moderating effects of economic development, innovation capacity and informal entrepreneurship. Secondly, we reach beyond the neoclassical growth model to accept innovation as another feasible explanation for the downturn in informal entrepreneurship and the consequent economic growth. The literature on economic growth primarily approaches endogenous factors, factors of production, capital and labour (Solow, 1956; Swan, 1956; Romer, 1986; Lucas, 1988; Solow, 2007). The econometric estimates apply methodologies based upon multiple panel regressions with the objective of measuring informal entrepreneurship through recourse to the Autio and Fu (2015) model given both that this facet is not measurable in any direct form and dependent on innovation activities and the level of economic development (we compare European countries in accordance with the two groups of economy defined by GEM: stage 2 (Efficiency-driven and transition to innovation-driven) and stage 3 (innovation-driven). Thirdly, the majority of studies on informal entrepreneurship concentrate primarily on developing countries, even if not exclusively (Goel, et al., 2015; Welter et al., 2015; Mujeji et al., 2015; Fu et. Al., 2018). The ILO (2012) reports that one in every six (17%) members of the global non-agriculture labour force engages in some form of informal sector entrepreneurship as their main form of employment. However, the percentage of the non-agricultural work force involved in informal entrepreneurship varies across global regions: 26% in Sub Saharan Africa, 23% in Latin America and the Caribbean and 19% in East Asia and Pacific, down to 11 % in the Middle East and North Africa, 10% in South Asia and 8.5% in Europe and Central Asia. In terms of participation in informal sector entrepreneurship in the 27 member states of the European Union (UE-27), analysis by the Eurobarometer 2007 survey no. 284 on the informal labour sector finds that 1 in 28 (almost 4%) of the 26,659 adults interviewed reported some form of such entrepreneurship over the last twelve months, spending an average of 73 hours on such work and earning an average of €11.05 /hour, producing annual average income from informal entrepreneurship totalling €806. Almost threequarters (73%) of this autonomous informal labour takes place through close social relations (for example, parents, neighbours, friends, acquaintances and colleagues). A little over one-quarter (27%) is at the behest of other, previously unknown persons and families (Williams, 2014). Therefore, this problematic framework rarely gets approached in Europe and correspondingly justifying the importance of this study.

The structure of this research is as follows: firstly, we set out the theoretical framework the study derives from, which combines the impacts of R&D, innovation and economic growth on informal entrepreneurship. We then present the methodology and study data analysis procedures based on figures from the World Bank (WB), the Organisation for Economic Cooperation and Development (OECD), the Global Entrepreneurship Monitors (GEM) and the World Intellectual Property Organisation (WIPO). Our research objectives, on the one hand, involve analysing the impact of R&D investment on informal entrepreneurship and, on the other hand, the moderating effect of the level of economic development on their innovative capacities and informal entrepreneurship results. To this end, and in accordance with GEM, we divide the countries of Europe into two stages of development and may report that the higher the level of economic development, the greater the innovative capacity and, furthermore, the lower informal entrepreneurship becomes. The same holds for R&D investment with its increase being inversely proportionate to informal entrepreneurship. We correspondingly conclude that R&D investments return negative impacts on informal entrepreneurship, that is, they evolve in inverse directions. We may also verify how the level of economic development holds a moderating effect on innovation capacity (with a positive influence) and furthermore generating the same effect, but in a negative direction, on informal entrepreneurship. Thus, the greater the level of economic development, the lower the level of informal entrepreneurship.

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PARALLEL SESSION 1

ENTREPRENEURSHIP: THE PREPONDERANCE OF EXTERNAL CONSTRAINTS

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Extended Abstract

The main objective of this study is to determine the influence that the external constraints (EFC – Entrepreneurial Framework Conditions) can exert on the entrepreneurial activity.

The study of issues concerned with entrepreneurship has gained, over the last decades, special relevance. Today, in an extremely competitive global economic environment and, in a global context, the entrepreneurship is driven by innovation, entrepreneurial activity is at the forefront and its growth has really accelerated. In general, it seems logical to assume that behaviour of an entrepreneurial nature can be motivated by the existence of conditions conducive to it. Therefore, it seems important to study the impact that the external environment to the organizations produces on its entrepreneurial performance in order to ascertain the conception explained above, being this the purpose of the investigation developed.

Thus, from the selected database, the Global Entrepreneurship Monitor (GEM), a sample of 2705 responses was collected from the National Survey Survey (NES), a survey of various experts on the matter around the world.

This work is based on an initial Literature Review about the concept of entrepreneurship, as well as the different external constraints that influence it. In this section the hypothesis of investigation are also defined. Through the results obtained in the bibliographical research carried out, and consequent literature review, it can be concluded that although it has progressed well over the last years and gained a greater preponderance, there is still no definitive concept of entrepreneurship. However, it seems to be common to much of the literature that entrepreneurial activity plays a preponderant role in any society, since it brings positive benefits both socially and economically. Another important idea to retain, which is directly related to the problem under study, has to do with the influence of the environment where the activity takes place in entrepreneurship. Depending on the external constraints of the place that hosts the entrepreneurial activity, it can develop in a more or less favourable way. The second fraction of the work refers to the Methodology, which describes the logical and scientific methods by which the study is carried out. The third part is related to the Multivariate Analysis, which allows the practical component of the study to be accomplished through statistical analysis. Through Factor Analysis, it was possible to frame the EFCs into factors and thus fulfil the purpose of representing an initial number of variables in a smaller number. It was possible to organize them into two distinct factors: Education for Entrepreneurship, Culture, Financial Environment and Government Support and Infrastructure Access and Tax and Market Charges. Regarding reliability, both factors present acceptable values, with acceptable consistencies, according with the corresponding Cronbach's Alfa values.

Linear Regression made it possible to inquire about the influence of EFCs on entrepreneurship, reproduced in the Total early-stage Entrepreneurial Activity index. Through the implementation of a Linear Regression, it became feasible to gather the most relevant EFCs in the level of entrepreneurship, represented in the essay by the index of Total early-stage Entrepreneurial Activity. Thus, it was concluded that the variables Entrepreneurial level of education at Vocational, Professional, College and University, R&D level of transference, Internal market dynamics, Physical infrastructures and services access and Cultural, social norms and society support, are those that have the greatest impact on TEA, demonstrating that they are the EFCs that have the greatest impact on the development of entrepreneurship.

In the analysis performed it was confirmed that the significant variables are similar for the obtained with the database of 2014 (analysis due in other work). This coincidence of results may be due to the small temporal distance between studies (only three years apart). Through statistical analysis, it is possible to compare the information obtained with the Literature Review, thus finally, in Conclusion, there is an association between the constant theory in the Literature Review and the conclusions obtained through the statistical analysis. For future research it is suggested the study of the indicators analysed here at the geographical level and the non inclusion of the EFCs individually, but alternatively, in subgroups from the beginning of the project, in order to achieve a more systematized global vision.

Literature Review

Concept of Entrepreneurship

In the literature, in general, entrepreneurship is defined as the act of creating a business, constructing it and resizing it, in order to generate profit (Business Dictionary, 2018). However, such definition seems somewhat limiting.

According to Stefanescu (2012), the concept of entrepreneurship has undergone a significant evolution in recent centuries. The author makes a brief breviary on the different understandings that marked the notion of entrepreneurship: Richard Cantellion, in 1755, considered entrepreneurship as self-employment of any kind, involved in a process of taking the risk of organizing production factors, to deliver a product or service required by the market. Alfred Marshall, in 1890, defined entrepreneurship as an important factor of production, along with land, capital, and labor. Joseph Schumpeter, in 1934, added a new dimension to the concept: innovation and, as a result, regarded the entrepreneur as innovative. Peter Drucker, in 1985, developed the innovation dimension associated with entrepreneurship, stating that it represents the exploitation of existing resources through the ability to produce something new. In their turn, Audretsch & Thurik considered entrepreneurship as a multifaceted and heterogeneous activity, in 2001.

According to Carlsson & Braunerhjelm (2013), entrepreneurial activity is currently recognized as one of the main drivers of industrial dynamics, economic development and business growth, developing in many subfields within various disciplines - mainly economics, business management, sociology or psychology - thus representing a variety of research, perspectives and methods. The above-mentioned authors define entrepreneurship more broadly, as an economic function carried out by individuals or entrepreneurs, who act independently or within certain organizations, enabling and creating new opportunities and introducing their ideas into the market, under uncertainty, making decisions about location, product design, resource use, institutions and reward systems.

Entrepreneurship is considered an important mechanism for economic development through employment, innovation and social welfare effects. Entrepreneurship dynamics can be very different depending on the institutional context and level of economic development (Acs, Desai, & Hessels, 2008). Measuring and comparing the level of entrepreneurship for different periods of time and different countries is difficult to achieve reliably, since there is no definitive definition of entrepreneurship or a universal set of indicators to accompany it (Wennekers, Uhlaner, & Thurik, 2002).

Preponderance of external constraints on entrepreneurship

The nature and structure of business activities vary according to the environment that surrounds them. The environment that shapes the economy, therefore, affects the dynamics of entrepreneurship. This environment is marked by interdependencies between economic development and institutions, which affect other parameters, such as the quality of government, access to capital and other resources and the perceptions of entrepreneurs (Acs et al., 2008). In order to determine the rate of entrepreneurship it is necessary to identify the determinants of entrepreneurship, aggregate conditions such as education, level of economic development, culture and institutions that influence entrepreneurship opportunities (Wennekers et al., 2002).

The GEM (Global Entrepreneurship Monitor) research consortium has been working since 1999 to measure and compare entrepreneurship among countries, providing information on three main components underlying the phenomenon of entrepreneurship: social values, perceptions and cognitive factors; business dynamics and self-employment and context (Sampaio, Correia, Braga & Braga, 2017).

The GEM database includes two complementary tools: APS and NES that provide information on EFCs (Entrepreneurial Framework Conditions), conditions that improve (or hinder) the creation of new business. The objective of the NES, object of the study developed, is to provide an overview in terms of entrepreneurship through several factors that significantly impact the scope in question. The EFCs, which are briefly reviewed individually below, are:

- Financial environment;
- Government policies;
- Government programs;
- Education and training for entrepreneurship;
- R & D transfer;
- Access to commercial and professional infrastructures;
- Internal market dynamics;
- Access to physical infrastructures and services;

Social and cultural norms

Financial environment

Many authors suggest that finance is, in most cases, the most important requirement for entrepreneurs. According to Black & Strahan (2009), liquidity constraints pose important barriers to potential entrepreneurs and, on the other hand, individuals with more assets are more likely to become self-employed and succeed in small businesses. The relationship between finance and entrepreneurship is broadly accepted as common sense, since funds are one of the main sources of business (Sampaio, Correia, Braga & Braga, 2017). Thus the first hypothesis of investigation can be defined:

H1: The country's financial environment influences its entrepreneurial level.

Government policies

Legislation is one of the most studied external conditions in the area of business activity, since regulatory issues are often cited as barriers to the entry of companies in the most diverse markets. Labor market regulation, taxes and rigidity tend to cluster as barriers to business creation (Klapper et al., 2006). Notable examples are the increased attention to competition at EU level, which is reflected in the creation of a number of regulations, and the expansion of the private sector in many countries due to deregulation and a reduction in the tax and social security burden (Wennekers & Thurik, 1999). Thus the second hypothesis of investigation can be defined:

H2: The country's government policies influence its entrepreneurial level.

Government Programs

Through support programs dedicated to the matter, governments can facilitate entrepreneurship by filling gaps in their resource and skills needs - either on a subsidized basis or by correcting the market to meet those needs. Governments can support entrepreneurial ventures through programs that provide grants, material and information support for new ventures (Keuschnigg & Bo, 2004). This type of program can reduce transaction costs for companies and contribute to entrepreneurs' human capital (Delmar & Shane, 2003). Thus the third hypothesis of investigation can be defined:

H3: The country's government programs influence its entrepreneurial level.

Education and Training for Entrepreneurship

Entrepreneurship education (EE) is one of the fastest growing fields of education in the world in recent years (Sirelkhatim & Gangi, 2015), which is an indication of the importance of entrepreneurship to the economy of any society. There is a tacit assumption linking EE and economic growth, the generation of employment opportunities and the improvement of economic development in general. In another perspective, there is a debate between academics and entrepreneurs about whether entrepreneurship can be taught, or whether it is an innate aptitude (Gailly, Fayolle, & Lassas-Clerc, 2006).

Hansemark (1998) argues that traditional education should be seen only as a transformation of knowledge and skills, while entrepreneurship education, on the other hand, is presented as a model for changing attitudes and motives. Thus the fourth hypothesis of investigation can be defined:

H4: The country's education and training for entrepreneurship influence its entrepreneurial level

R&D transfer

According to Stam & Wennberg (2009), the effect of R&D on the growth of entrepreneurship seems to be achieved by increasing inter-company alliance levels in the first post-entry years. R&D efforts enable the exploitation of knowledge, stimulating the later development of new products in the life course of companies, although this does not appear to affect the growth of the company. However, in an indirect way, it can affect the growth of other companies that learn from these development activities (knowledge spillover). Thus the fifth research hypothesis can be defined:

H5: The country's R&D transfer influences its entrepreneurial level.

Access to commercial and professional infrastructures

Commercial and professional infrastructures comprise the business services necessary for the management of enterprises such as subcontractors, suppliers, consultants and legal services, accountants. A good availability of this type of services allows the entrepreneurial companies to focus on their core business, achieving gains in efficiency and specialization (Suzuki, Kim & Bae, 2002). A company with gaps in terms of legal services, for example, may find them an obstacle to its development. This factor may be particularly important for high potential firms, which may quickly need to obtain limited liability status and negotiate legal agreements with other stakeholders (Levie & Autio, 2008). Thus the sixth hypothesis of investigation can be defined:

H6: The country's access to commercial and professional infrastructures influences its entrepreneurial level.

Internal market dynamics

Several studies have theorized about the market's life cycle effects in entrepreneurship, predicting higher entry rates for start-ups near the start of a market's life cycle (Klepper, 2002). In the initial stages, the entry of new companies provides an important factor of dynamism to the market, but the dynamism, by itself, also opens opportunities of entrance to other entrepreneurial ventures. There is, therefore, a bilateral relationship between the entry of new firms and the dynamism of the market. Thus the seventh research hypothesis can be defined:

H7: The country's internal market dynamics influence its entrepreneurial level.

Access to physical infrastructures and services

Physical infrastructures such as transport, terrain or operating space, and the communication facilities guaranteed with the Internet or the telephone are vital to the success of the operation of entrepreneurial activities (Hansen & Seborá, 2003). The availability of these services will encourage the creation of new ventures (Carter, Gartner, & Reynolds, 1996). Thus the eighth research hypothesis can be defined:

H8: The country's access to physical infrastructures and services influences its entrepreneurial level.

Social and cultural norms

It is plausible that cultural differences, which include values and beliefs, can influence a wide range of behaviors, including the decision to work on their own rather than working for others (Thomas & Mueller, 2000). Davidsson (2016) identifies two views on the relationship between cultural values and entrepreneurial behavior. The first, which he calls psychological trait for entrepreneurship, is based on the idea that if a society has more people with entrepreneurial values, more individuals can effectively become entrepreneurs. Davidsson also identifies a second view, which he refers to as social legitimation. This view assumes that the variation in terms of entrepreneurship is based on the differences of values and beliefs between the population as a whole and the potential entrepreneurs. According to this last point of view, it is precisely the clash of values between the groups that drives the entrepreneurial potential. Thus the ninth hypothesis of investigation can be defined:

H9: The country's social and cultural norms influence its entrepreneurial level.

Methodology

In order to obtain information about the subject under study, a bibliographical research was carried out, involving the consultation of several scientific articles related to entrepreneurship and the influence of the external constraints on the entrepreneurial activity.

The database that supports the study is the NES (National Survey Survey) of the Global Entrepreneurship Monitor (GEM) project (in this case, the 2014 version). The GEM is by many considered to be the largest study in the world in terms of entrepreneurship, and used by organizations such as the United Nations, the World Bank or the OECD. The National Survey Survey (NES) consists of a survey used to gather the opinions of various experts from various countries on a wide range of items, each designed to capture a different dimension of a specific Entrepreneurial Framework Condition (EFC), important components of any entrepreneurial ecosystem.

In order to apply statistical techniques to the data in question, using the statistical analysis software Statistical Package for the Social Sciences (SPSS), two changes were made to the original database: the variable TEA_INDEX was added, which represents the index that measures the Total early-stage Entrepreneurial Activity, that is, the level of entrepreneurship of several countries, in order to be able to relate this index to the EFCs referred to above. Taking into account that for some countries (Turkey, Latvia and Kuwait) for 2014, this index is not available, the questionnaire responses of individuals from these regions were excluded, resulting in a number of observations of 2705 (in contrast to the initial 2823), which constitute the study sample.

Taking into account the proposed objective of the project, the use of multivariate statistical techniques proved to be imperative. Thus, we opted for the application of a Factorial Analysis, since this technique allows to represent or describe a number of initial variables, in this case the EFCs, from a smaller number of hypothetical variables. In addition, in order to inquire about the influence that the EFCs have on the TEA, a Linear Regression was performed, since this technique allows to establish relations among the variables, enabling the prediction of the value of the TEA (dependent variable) from the set of Framework Conditions (independent variables).

Conclusion

Through Factor Analysis, it was possible to frame the EFCs into factors and thus fulfil the purpose of representing an initial number of variables in a smaller number of subsets. Through the implementation of Linear Regression, it became feasible to gather the most relevant EFCs in the level of entrepreneurship, represented in the essay by the index of Total early-stage Entrepreneurial Activity. Thus, through statistical analysis, it is possible to compare the information obtained with the Literature Review.

Keywords

Entrepreneurship; EFCs - Entrepreneurial Framework Conditions; Factor Analysis; Linear Regression.

Topics

- Internationalization and cross cultural management
- Entrepreneurship
- Industrial Mathematics in Management and Engineering

PARALLEL SESSION 1

ON THE GEOGRAPHY OF FEMALE ENTREPRENEURSHIP AND ITS CONNECTION TO THE TRIPLE HELIX

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Extended Abstract

Abstract

During the last decades the role of entrepreneurship has been widely discussed, mainly to the recognition of its impact on economic growth and development. Several studies devoted their attention in understanding the differences among countries, considering that it was of paramount importance to address entrepreneurship determinants and hindering factors. In another stream, the role of culture is been widely acknowledged as a leverage for innovation development. This topic has been widely researched focusing in organisations and their business culture. Nevertheless, the role of the triple helix, combined to the entrepreneurial culture has not been disentangled and the evidence about the singularities of the territory and the entrepreneurs has been neglected. The present work aims to understand the geographical dimension of the entrepreneurial culture, gender segmentation, and its connection to the triple helix along with other determinants of the entrepreneurial initiative. Specifically, the study determines the moderating effect of (national) culture and gender on entrepreneurial activity and the possible actions to be taken by the helix. The study uses and the Global Entrepreneurship Monitor – GEM – database from the years between 2010 and 2015, grasping information of 22 countries. A logistic panel was run revealing cultural heterogeneity towards entrepreneurial activity, particularly when comparing Europe and South American countries. Entrepreneurial initiatives have different determinants according to the gender; and females in undeveloped countries have higher propensity to start a business. Findings reinforce a different role of Academia and Governance giving relevance to the debate on the role of the triple helix to promote entrepreneurial initiative in different perspectives and appraise the singularities of individuals and territories. The article has several highlights in either the theoretical perspective (new studies devoted to understand the role of the triple helix on geographical entrepreneurship asymmetries) or the applied (providing insights for policy makers).

Keywords: entrepreneurship, geography, triple helix, innovation, GEM

1. Introduction

The generation of competitive advantages of countries is strongly connected to innovation, playing a capital role in territorial and firm dynamics. Embracing innovation practices and change firm culture towards innovation will raise competitiveness. Many firms focus on innovation-driven processes taking in consequence increased risks to achieve excellence. Innovation is on the top priorities for firms but also for countries, and, both of them are looking for strategies to support innovative and entrepreneurial activity, since it is widely recognised its impact on economic development and sustainable growth. A part from industry and corporate fields, innovation and entrepreneurship are also emergent (and core) subjects when it comes to country level.

Different nations reveal different characteristics, which could lead to the conclusion that innovation is pursued differently. There are several factors that influence the propensity to innovate and act more entrepreneurially, such as the environment. Governance should be a catalyst in the promotion of a favourable innovative and entrepreneurial environment by means of institutional reliability; investments in innovation, access to information and accurate legislation, therefore helix plays a central role towards the homogenization of the territorial. Previous studies have demonstrated that innovation requires specific conditions and culture is considered to be an important determinant of innovation along with individual creativity as a basis for starting-up innovation greatly depends on the surrounding (societal) culture as a whole (Kaasa, 2015). Relying on Hofstede definition on culture “the collective mental programming (...) part of our conditioning that we share with other members of our nation, region or group but not with members of other nations, regions, or groups’ four dimensions were identified as relevant: individualism and collectivism, larger or small power distance, strong versus weak uncertainty avoidance and lastly, masculine versus feminine values. There are differences in innovation culture among different countries related to attitude, technology, exchange of knowledge, business, entrepreneurial activities and also, gender. Therefore, when it is recognized homogeneity among countries, it can be seen as culture unification. Culture unifies people’s behavior, but it may also create barriers between people, thus nowadays, innovation faces the consequences of culture for various reasons (Kaasa, 2015). Yet, the role of gender on innovation and entrepreneurial activity hasn’t been addressed yet. Gender equality is being taken at the core of all strategies to develop more inclusive and innovative societies since more gender diversity will help promote innovation and competitiveness in business” (Adema et al., 2014;p.9). Despite the attainment of opportunities parity, at least in some developing economies, as showed by Parker (2009), business opportunities and entrepreneurial initiative are not well balanced among men and women highlighting the gender gap among labor market (Kelley et al., 2017). The global economic pressures are pushing nations to be strongly committed to entrepreneurship strategies to endorse employment and innovation (Ennis, 2018) but the empowerment of women is not partaking equally when compared to male counterparts, therefore, gender challenges needs to be addressed, along with other constrains towards entrepreneurial activity, as the role of culture and social environment.

Exploring the role of culture on women’s entrepreneurial activity constitute a very attractive case for three key reasons: (i) women’s entrepreneurial activity is a recent research stream, under-discussed in the academic literature, (ii) the role of culture towards entrepreneurial activity, especially on women’s self-employment pathways needs to be clarified, (iii) regional policies among women entrepreneurship could be an open floor for future policy development. In this line, Global Entrepreneurship Monitor (GEM) developed recently launched the Global Entrepreneurship Monitor on Women’s Entrepreneurship 2016/2017 Report were female Total Entrepreneurial Activity (TEA) was assessed through several factors. The last results surprisingly shows that among 63 economies (out of 74), the overall female Total Entrepreneurial Activity (TEA) rates have increased by 10% and the gender gap (ratio of women to men participating in entrepreneurship) has narrowed by 5% (Kelley et al., 2017). This comes in line with previous reports, which showed an average increase in female TEA rates of 7% and a narrowing of the gender gap by 6% over the prior two-year period, revealing a positive trend on women’s entrepreneurship. The study uses a panel logistic analysis based on the Global Entrepreneurship Monitor – GEM – database between 2010 and 2015, with information of 22 countries. GEM is the largest survey-based study on entrepreneurship around the world and allows an annual assessment of entrepreneurial activity phenomenon worldwide, particularly on a longitudinal perspective, and women based as grasped by Pines, Lerner, & Schwartz (2010), Noguera, Alvarez, & Urbano (2013) or (Klyver, Nielsen, & Ewald, 2013).

In addition, these data were complemented with data from Regional Innovation Scoreboard (RIS). The RIS purpose is to help monitor, measure and benchmark the innovation performance of the European Union, individual Member States, as well as associated countries and selected global competitors. identified entrepreneurship as one of the indicators “that could capture the innovation-friendliness of the business environment”. The report *Creating an Innovative Europe* suggests “need for Europe to provide an innovation friendly market for its businesses” (Aho, Cornu, Georghiou, & Subirá, 2006) shedding the light on triple helix role.

The present paper aims to unfold innovation related factors such culture and gender. Moreover, the study intends to understand what underpins women’s entrepreneurial initiative and gather insights on culture’s role towards entrepreneurial activity by comparing several countries. Variables such as fear to fail, knowledge perception, social environment and education are taken to explain entrepreneurial activity. As moderator variables, it was considered the country innovation stage of development. Existing asymmetries will evidence the need for fine tuning adjustments in terms of the Academia and Governance to smooth the gender gap.

The article has several implications from both theoretical perspective (new studies devoted to understand the role of culture on entrepreneurship) and empirical (providing insight’s for governmental policies).

The article is structured as follows. After the introduction, in sections 2 and 3 the conceptual framework and research hypotheses are presented. In section 4 the methodology used in the empirical part is detailed. Section 5 provides the results and discussion. Finally, section 6 presents the main conclusions of the study along with limitations and future research lines.

2. Conceptual framework: entrepreneurship and innovation culture

Entrepreneurship stream of research is growing widely which has stimulated the emergence of different visions on the field. Recently, research devoted to women’s entrepreneurship has been growing mostly by its recognition as a relevant contributor to employment, innovation and economic growth (Kelley et al., 2017). According to United Nation’s Sustainable Development Goals (SDGs) empowering women are one of the goals that implies a strong normative dimension, particularly when it’s possible to recognize cultural patterns around the world related to employment. Additionally, other socio and political circumstances could be taken as explanatory dimensions for entrepreneurial activity.

There are research results that shows the relevance of gender towards entrepreneurship (Gupta & Bhawe, 2007). According to GEM last Report, among 49 economies, there are 7 women entrepreneurs for every 10 men entrepreneurs in the world, and only 6 countries have equal rates of entrepreneurial activity (starting a business) between women and men (Bosma & Kelley, 2019;p.11) namely, two in the East and South Asia region (Indonesia and Thailand), one in Latin America (Panama) and three in the Middle East and Africa region (Qatar, Madagascar and Angola).

3. Hypotheses and proposed model

3.1. Gender and entrepreneurship

According to Heilman (2001) gender stereotypes can impact deeply on people's career intentions. Recent reports show that the number of women involved in business activities has been raising, contributing to change the vision about a 'underutilized' working force. Prior studies consider males more entrepreneurial when compared to women when it comes to entrepreneurial initiatives (Fellnhofer & Puumalainen, 2017) but the gender issue can be considered as the only influencer of entrepreneurial behavior. As mentioned before, entrepreneurship is a tool that contributes to balance opportunities and provide options on employment landscape, particularly on those regions with low-income and that struggle from lack of equal opportunities and social exclusion (Pines, 2010). In such cases, self-employment is particularly relevant for women who struggle to find employment because of limitations imposed by education, age or social marginality. The authors also found in low-income countries the prevalence of "necessity" entrepreneurship and "push" factors in women's entrepreneurship grounded by inequality and exclusion in women's entrepreneurial inferiority.

In Klyver et al.(2013) perspective, self-employment can be assumed to represent an act of disintegration for both men and women but for when women's choose to follow this career option it is seen as particularly disintegrated. The work of Hossain et al.(2009) supports this vision by considering that women's face barriers along their employment or developing self-enterprises. Additionally, more educated and skilled women might be successful in self-business, but in other hand, they find it difficult to obtain jobs because of gender discrimination and stereotyping (Hossain et al., 2009). Therefore, we posit the following hypothesis:

H1:Female are less prone to start up a business

3.2. Education and Entrepreneurship education

According to (Manolova, Carter, Manev, & Gyoshev, 2007) women enterprises bare lower levels of innovation due to the lack of human capital, such as education, experience or experienced founders. This goes in line with Liñán (2008) who advocates that for entrepreneurs to be successful, they must develop certain skills and abilities such as leadership and communication, innovation and networking. Such business training is therefore seen as a pool to raises success since challenges around new venture creation are related to resources management, access to funding and strategic partners. In another study, Raghuvanshi, Agrawal, & Ghosh (2017) mention that lack of education, experience and training opportunities among the women entrepreneurs is the strongest barrier among all. This perspective emphasizes the fact that women entrepreneurs are less educated, less experienced and have less training opportunities than their male counterparts. Although women's formal education levels, on average, resemble similar to men level's, women still tend to have less experience in self-employment (Marlow, Henry, & Carter, 2009) which could be considering a fragility. To overcome such limitations Timmons & Stevenson (1985) suggest that entrepreneurship is an ongoing lifelong learning experience and, as such, the best way to learn is to combine experience with formal educational activities. Consequently, entrepreneurship education is considered a leverage to enhance "an alternative career path to employment (Bae, Qian, Miao & Fiet, 2014).

H2a: Education raises the probability to become entrepreneur

H2b: Skill perception raises the probability to become entrepreneur

3.3. Social Context and entrepreneurship

For those women that have less experience and training than male entrepreneurs, their family may necessarily serve as a training ground, preparing these women to act in a business environment (Gundry & Welsch, 2001). To overcome education and experience limitations, early socialization and role modelling in familiar context revealed to act as motivation source to start a business. Toutain, Fayolle, Pittaway, & Politis (2017) argued that the environment plays a role of positive influence on the development of learning initiatives in entrepreneurship meaning that entrepreneurs more engaged in their environment tend to develop critical analysis skills which lead them to develop pioneering and innovative activities.

H3: Knowing other entrepreneurs will raise the probability to become another

3.4. Fear of failure and entrepreneurship

Entrepreneurs are enterprise builders, therefore risk talkers. According to (Hossain et al., 2009), entrepreneurs “perceive new business opportunities, organize businesses where none existed before, direct these businesses by using their own and borrowed fund, take the associated risks, and enjoy profit as rewards for their efforts”. Nevertheless, several studies show that those who are less risk-takers and feel more fear to fail are less involved in entrepreneurial activity. In this setting, Minniti & Nardone (2007) argues that women’s barrier to start a business are the fear of failure and the inability to identify opportunities. Moreover, according to Pines et al.(2010), women seem to be able to obtain the relevant skills for setting up a business, but fail in persisting.

H4: Fearing failure will deter entrepreneurial endeavours

3.5. Innovation culture and entrepreneurship

Considering developing countries, the conservative socio-cultural environment is an adverse force to women entrepreneurship (Hossain et al., 2009), but other factors could hinder women to pursue business pathways. In general, opportunities arise from changes in the environment in which individuals operate. Studies have further revealed that openness profiles and opportunity recognition awareness can lead individuals to identify entrepreneurial opportunities and perform accordingly in response to these opportunities. For those who recognize these opportunities different (self) employment opportunities may occur, nevertheless, favorable circumstances could act as catalysis towards entrepreneurship (Santos, Marques, & Ferreira, 2018).

According to (Prim, Filho, Zamur, & Serio, 2017) masculinity–femininity culture dimension posted by Hofstede, could explain the degree of innovation of a country, since it is possible to see that the male characteristics of the culture corresponds to a collective programming of the mentality that distinguishes the members of one group from those of another. Therefore, innovation culture could be defined as a culture that unfolds the generation and implementation of innovative behaviors, practices, products and processes, contributing to leverage innovation potential (of a country).

H5: Innovative countries have high levels of entrepreneurial activity

Based on the study's aims and the research hypotheses grounded on the literature, the conceptual research model shown in Fig. 1 was developed.

Figure 1. Conceptual research model [insert Figure 1]

4. Methodology

4.1 Data and methods

In order to debate the role of culture in entrepreneurship and the existence of gender gap a panel was constructed based on the datasets from GEM (GEM population survey), which contained individual detailed data about entrepreneurial activity and the experts' opinion concerning determinant aspects of the entrepreneurial propensity. In order to understand the effect of the culture and gender in entrepreneurship, the option was balancing the panel to avoid heterogeneity produced by difference in terms of respondents over time at the country level. This procedure forced dropping all those countries in which no reports were found for the complete time span. So, the balanced panel of individuals and experts comprises information for 22 countries in 4 continents and 6 years (from 2010 to 2015). As GEM is implemented worldwide, the present study kept its comprehensiveness as it includes 1 country in Africa, 6 from Latin America, 12 from Europe and 3 from the Middle East and Asia, providing reliability and validity of the study and, a generalization of comparisons. Data collection under the GEM methodology entails a survey to Adult Population Survey (APS), covering aspects such as the characteristics, motivations and ambitions of individuals starting businesses, as well as social attitudes towards entrepreneurship (Bosma & Kelley, 2019), and the expert's opinion (NES – National Expert Survey) in terms of the institutional and implemented structures to promote entrepreneurial actions analyzing the context in which businesses are set. Our data on entrepreneurial activity derive from the GEM (APS and NES) presented in the Global Entrepreneurship Monitor Report of 2010 to 2015.

4.2. Analytical Strategy: Description of variables and model

Considering the balanced panel constructed combining the different waves of the Global Entrepreneurship Monitor Report from 2010 to 2015, a country selection was performed based on those countries present in the time span, to mention: Argentina, Brazil, Chile, Colombia, Croatia, Finland, Germany, Greece, Hungary, Iran, Ireland, Malaysia, Mexico, Norway, Portugal, Slovenia, South Africa, Spain, Switzerland, Taiwan, United Kingdom, Uruguay.

For the panel estimation we consider entrepreneurial activity as our dependent variable, which is binary, considering whether or not the individual does mention the intention or not to start a business, therefore, the most accurate methodology is a panel logit with random effects in all models run. The empirical analysis is fourfold: the first part presents descriptive results, the second correlations among variables, the third the econometric estimations run for the entire set to discuss the determinants of entrepreneurial activity followed by a secondary estimation of continent and gender segmented panels to assess the culture effect and differences in male and female propensity to enterprise. Therefore, we intend to discuss the relevance of culture in entrepreneurial activity along with the existence of eventual gender dissimilarities in entrepreneurial propensity.

The balanced panel combines information collected from the APS and the NES, and for the first case, we have included aggregate data rather than individual responses as the analysis is country level, rather than individual level, therefore our input being proportions. So, from the APS the dimensions 'social context' 'knowledge perception', 'fear to fail', 'education – graduate' and from the NES dimensions such as 'entrepreneurial education', cultural enhancers such as 'individual success', 'risk taking', 'self-responsibility' and the country development stage along with geography were considered to explain entrepreneurial activity as herein 'bstart'.

The variables considered, their coding, analytical level and description are presented in Table 1.

Table 1
Dependent, independent and control variables

<u>Variable</u>	<u>Coding</u>	<u>Proxy</u>
<i>Dependent variable</i>		
• Bstart	• Binary variable; coded as 1 if the individual currently intends to start a business, 0 otherwise	• Measurement of entrepreneurial initiative
<i>Independent variables</i>		
• Gender	• Binary variable; coded as 1 if the individual in the sample is a female, 0 otherwise (used as interaction with other variables).	• Dimension of the Entrepreneurial Gender Gap
• Development Stage	• Classification of the country group report (1 – factor driven; 2 transition; 3 – efficiency driven; 4 transition; 5 –innovation driven)	• Macroeconomic Context
• Individual Success	• Multinomial (ordered) variable that takes values from 1 to 9 according to expert's opinion about the cultural support in terms of individual success	• Entrepreneurial Culture
• Risk Taking	• Multinomial (ordered) variable that takes values from 1 to 9 according to expert's opinion about the cultural support in terms of entrepreneurial risk-taking	• Entrepreneurial Culture
• Self-responsability	• Multinomial (ordered) variable that takes values from 1 to 9 according to expert's opinion about the cultural support in terms of incentive to the self-management of welfare	• Entrepreneurial Culture
• Skill/Knowledge Perception	• Binary variable coded as 1 if the individual mentions having the skills to start a business 0 otherwise.	• Self-assessment of competences
• Education Graduate	• Proportion of individuals in the sample mentioning the availability on an undergraduate diploma	• Formal skills for managerial occupations
• Entrepreneurial Education	• Multinomial (ordered) variable that takes values from 1 to 9 according to expert's opinion about the provision of this knowledge in Universities	• Specific Skills

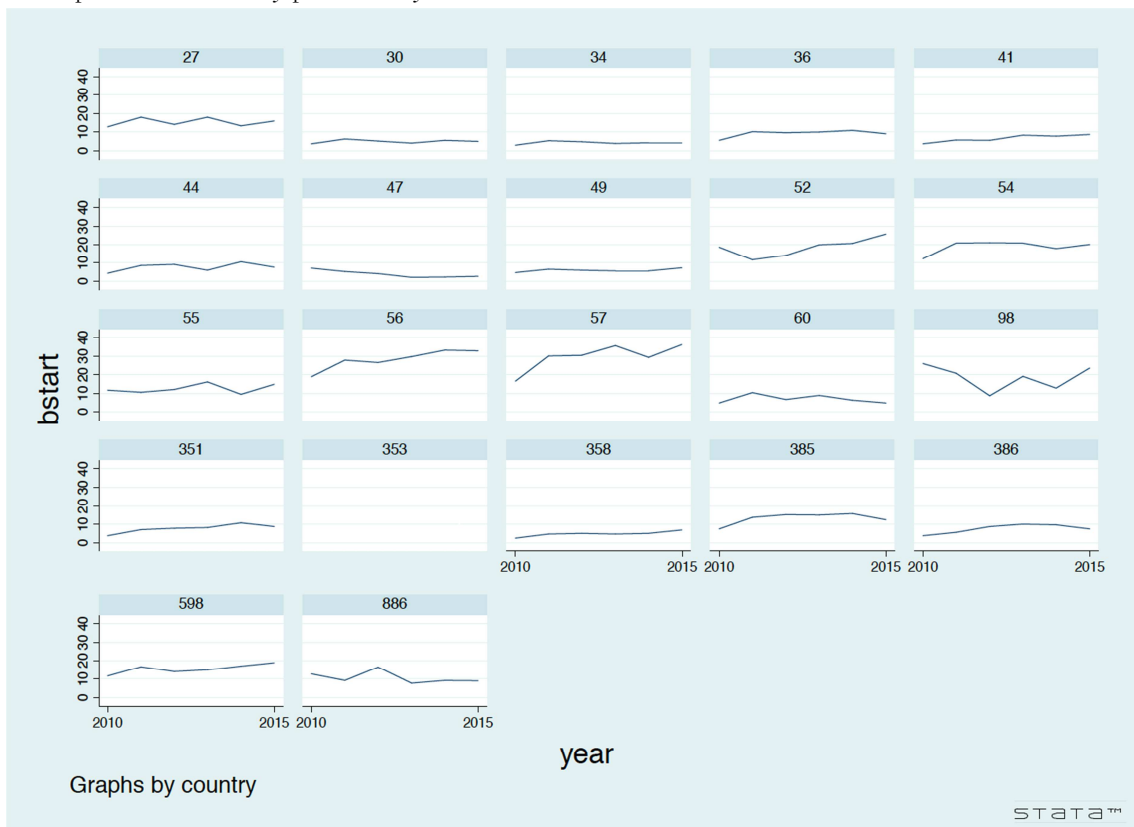
<u>Variable</u>	<u>Coding</u>	<u>Proxy</u>
<ul style="list-style-type: none"> • Social Context • Fear to Fail 	<ul style="list-style-type: none"> • Binary variable coded as 1 if the individual does know someone which is already an entrepreneur, 0 otherwise. • Binary variable coded as 1 if the individual fears failing in its entrepreneurial activity, 0 otherwise 	<ul style="list-style-type: none"> • Entrepreneurial activity in the close environment • Risk aversion

Our analytical strategy starts by presenting the empirical data in a visual view, to identify geographic and time trends, secondly the panel will be analyzed under the perspective of the descriptive and correlations, followed by more sophisticated analytical techniques as panel logistic random effects for the entire panel and geographic and gender segmentations.

5. Results and discussion

5.1. Descriptive findings

Figure 2
Entrepreneurial activity per country



Innovation stage by development per country



Figure 3
Entrepreneurial activity (bstart) per country.

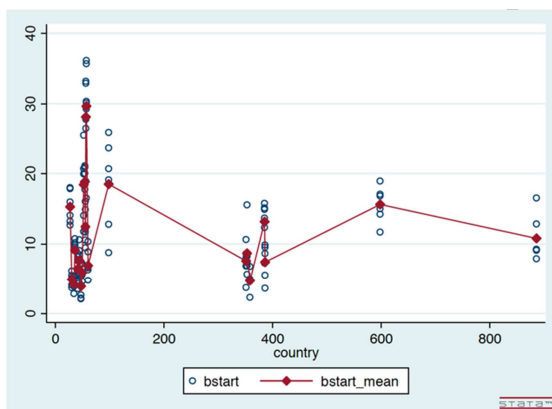


Figure 4
Entrepreneurial activity (bstart) overall trend

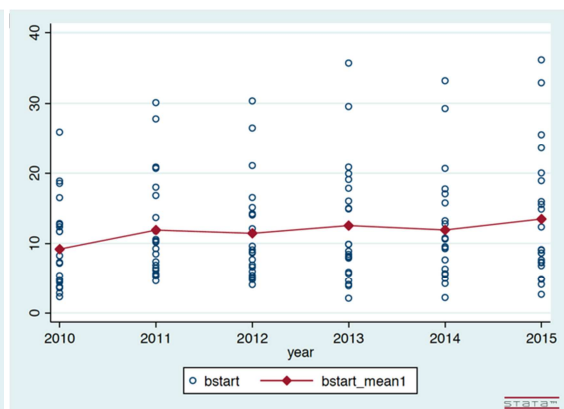


Figure 5
Entrepreneurial activity per continente

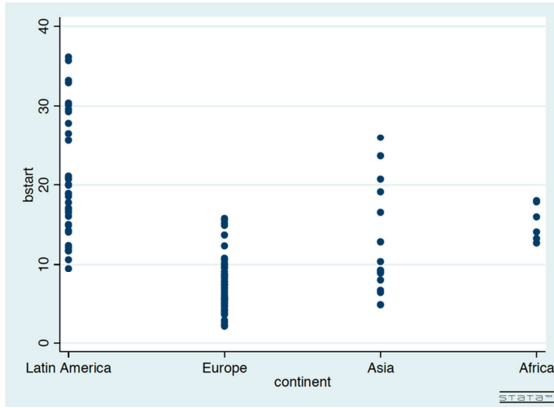


Figure 6
Fear to fail per continente

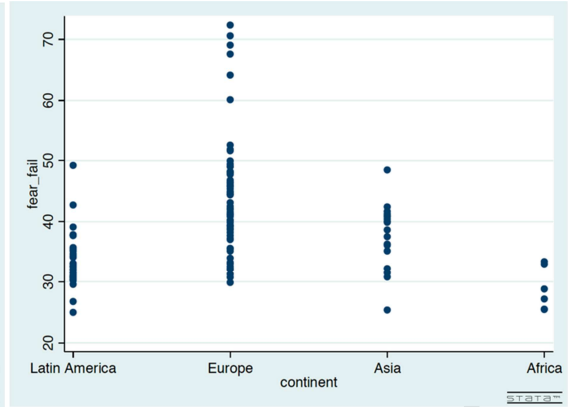


Figure 7
Knowledge perception per continente

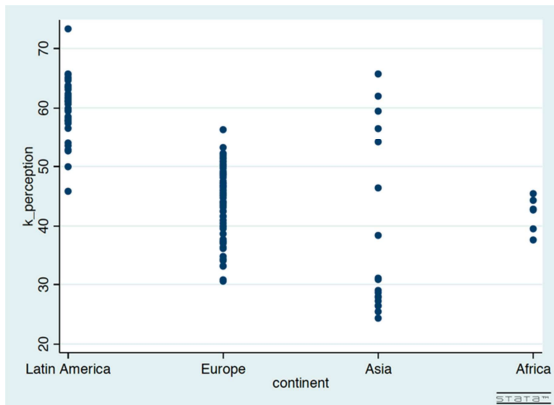


Figure 8
Social environment per continent

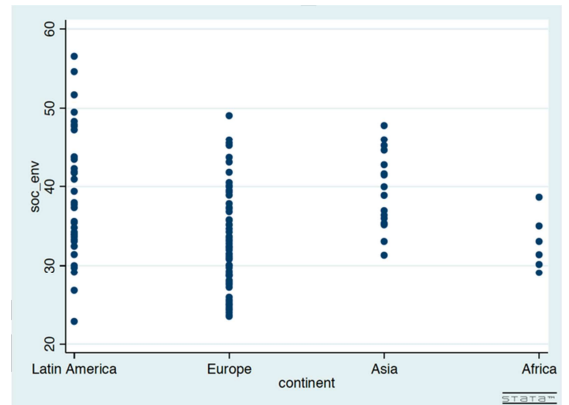


Table 2
Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
year	132	2012.5	1.714331	2010	2015
Country_Name	0				
continent	132	2.772727	.7371382	1	4
country	132	184.4091	225.2926	27	886
bstart	132	11.76371	7.809376	2.1	36.13
dev_stage	132	4.272727	.8568619	2	5
soc_env	132	35.08924	7.32599	22.85	56.54
k_perception	132	47.37962	10.83997	24.33	73.3
fear_fail	132	39.49417	8.989283	24.96	72.35
innov_inte~y	132	26.78053	10.94331	.76	57.35
Tea10ap1	131	13.31176	5.503902	3.49	30.48
Tea10ap2	132	30.54311	5.327713	15.83	43.63
Tea10ap3	132	27.40561	4.537871	17.02	44.12
Tea10ap4	132	19.40045	4.780138	8.04	35.24
Tea10ap5	132	9.438182	3.364368	3.07	19.26
WS_employed	132	13.32962	7.507969	2.47	31.25
WS_unempl	121	4.184628	2.70193	.12	13.39
WS_others	118	2.536102	2.328636	.11	15.77
ed_primary	131	7.404809	5.299948	.34	20.72
ed_secondary	132	9.759545	5.931086	2.56	24.05
ed_post_se~n	132	12.35477	6.944079	3.46	35.4
ed_graduate	103	14.29563	8.833797	2.07	43.14
gov_subs	132	3.126439	.8896763	1.5	6.06
inf_invest~s	132	2.856288	1.028088	1.6	6.18
Bangels	132	2.778258	.8596116	1.5	6.06
VentureCap	132	2.500909	.9738344	1.23	5.82
gov_policy	132	2.315455	.6889824	1.4	5.56
Ed_creat	132	2.380606	.730899	1.41	5.53
Ed_econom	132	2.176288	.6527586	1.28	5.62
Ed_ent	132	2.012273	.6459523	1.24	5.71
Uni_start_up	132	2.872879	.7350396	1.84	5.53
Ind_success	132	3.222045	1.00197	1.81	6.36
self_suffi~y	132	3.093409	.8879205	1.89	6.08
risk_taking	132	2.623712	.7760926	1.58	5.5
creativity	132	3.030682	.8347237	1.92	6.06
self_respo~y	132	3.038712	.8506158	2	6.46

Table 3
Correlation Matrix

	bstart	dev_st~e	soc_env	k_perc~n	fear_f~l	ed_gra~e	gov_subs	inf_in~s	gov_po~y
bstart	1.0000								
dev_stage	-0.6257	1.0000							
soc_env	0.1163	-0.2329	1.0000						
k_perception	0.6127	-0.4846	0.1132	1.0000					
fear_fail	-0.4699	0.3742	-0.4218	-0.3074	1.0000				
ed_graduate	0.6620	-0.3646	0.0024	0.4740	-0.3892	1.0000			
gov_subs	-0.0146	0.2592	0.1037	-0.2590	-0.0756	0.0536	1.0000		
inf_invest~s	0.0458	0.0978	-0.0146	-0.1116	-0.1290	0.1363	0.7006	1.0000	
gov_policy	0.0480	0.1538	0.0621	-0.0963	-0.1530	0.1038	0.6958	0.7313	1.0000
Ed_ent	-0.1185	0.2523	0.0039	-0.2369	-0.0762	-0.0527	0.6399	0.6273	0.7338
Uni_start_up	0.1814	0.0917	0.0239	-0.0045	-0.2248	0.2207	0.7328	0.8232	0.7444
Ind_success	0.2396	0.0843	0.1339	-0.0452	-0.2096	0.2033	0.6565	0.7982	0.7141
self_suffi~y	0.1438	0.1185	0.1336	-0.1499	-0.2002	0.1349	0.7182	0.7934	0.7328
risk_taking	0.1278	0.1256	0.0792	-0.1413	-0.1236	0.1083	0.6879	0.7865	0.7583
creativity	0.0350	0.2033	0.0436	-0.2130	-0.2156	0.0877	0.7422	0.8426	0.7277
self_respo~y	0.1707	0.1228	0.0808	-0.1017	-0.2512	0.1944	0.7142	0.7859	0.7672

Table 4
Fixed-effects (country)

bstart	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
soc_env	-.1761051	.1181905	-1.49	0.141	-.4116584	.0594482
k_perception	-.0461616	.1099749	-0.42	0.676	-.2653412	.1730181
fear_fail	.1612451	.1134354	1.42	0.159	-.0648312	.3873215
ed_graduate	.0813039	.0547219	1.49	0.142	-.0277567	.1903645
Ed_ent	-1.00763	1.407641	-0.72	0.476	-3.813054	1.797795
Ind_success	2.366927	1.130844	2.09	0.040	.1131588	4.620695
risk_taking	-1.737632	2.33993	-0.74	0.460	-6.401106	2.925841
self_responsability	.8569368	1.351356	0.63	0.528	-1.836311	3.550185

Table 5
Random-effects (europe)

bstart	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
soc_env	-.0282065	.0897359	-0.31	0.753	-.2040857	.1476727
k_perception	.0339237	.0856669	0.40	0.692	-.1339803	.2018277
fear_fail	.0710013	.0680124	1.04	0.297	-.0623006	.2043033
ed_graduate	.1954135	.0609387	3.21	0.001	.0759759	.3148511
Ed_ent	.0861082	.9175342	0.09	0.925	-1.712226	1.884442
Ind_success	2.259347	1.207475	1.87	0.061	-.1072593	4.625954
risk_taking	-.5420148	1.643993	-0.33	0.742	-3.764182	2.680153
self_responsability	-1.200065	1.038937	-1.16	0.248	-3.236345	.8362136
5.dev_stage	-6.160854	1.932398	-3.19	0.001	-9.948285	-2.373424
_cons	4.747274	6.442551	0.74	0.461	-7.879895	17.37444

Table 6
Random-effects (gender)

bstart	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Knoen10m	.0402315	.0819255	0.49	0.623	-.1203395	.2008025
Oppor10m	-.0305759	.0515058	-0.59	0.553	-.1315254	.0703736
Susk110m	-.0794416	.0670227	-1.19	0.236	-.2108037	.0519206
Ffail10m	-.2320955	.099249	-2.34	0.019	-.4266199	-.0375711
ed_graduate	.1527841	.0547801	2.79	0.005	.0454171	.2601511
Ed_ent	-.8965039	1.30643	-0.69	0.493	-3.457059	1.664051
Ind_success	2.349204	1.115785	2.11	0.035	.1623053	4.536103
risk_taking	-1.996295	2.152916	-0.93	0.354	-6.215932	2.223343
self_responsability	1.049431	1.311114	0.80	0.423	-1.520305	3.619166
dev_stage						
3	-4.978236	4.563827	-1.09	0.275	-13.92317	3.9667
4	-4.814128	4.308444	-1.12	0.264	-13.25852	3.630267
5	-12.61317	4.276053	-2.95	0.003	-20.99408	-4.232261
_cons	26.91878	7.563917	3.56	0.000	12.09377	41.74378
sigma_u	3.4098351					
sigma_e	3.0811624					

Knoen10f	.137377	.0918462	1.50	0.135	-.0426383	.3173922
Oppor10f	-.0328716	.0515255	-0.64	0.523	-.1338597	.0681164
Suskl10f	-.1417916	.0729534	-1.94	0.052	-.2847776	.0011944
Ffail10f	-.197589	.0772361	-2.56	0.011	-.3489691	-.0462089
ed_graduate	.1359466	.0531873	2.56	0.011	.0317014	.2401918
Ed_ent	-.8429857	1.28821	-0.65	0.513	-3.367831	1.68186
Ind_success	2.280772	1.090425	2.09	0.036	.1435779	4.417966
risk_taking	-1.795687	2.147516	-0.84	0.403	-6.00474	2.413367
self_responsability	.8995993	1.284888	0.70	0.484	-1.618736	3.417934
dev_stage						
3	-5.401355	4.788682	-1.13	0.259	-14.787	3.98429
4	-5.684297	4.57211	-1.24	0.214	-14.64547	3.276874
5	-12.93276	4.520415	-2.86	0.004	-21.79261	-4.072911
_cons	26.5023	6.593742	4.02	0.000	13.5788	39.4258
sigma_u	3.7755478					
sigma_e	3.107629					
rho	.59613123	(fraction of variance due to u_i)				

Conclusion

The purpose of this paper was to discuss the gender differences among entrepreneurial initiative in the context 22 countries with heterogeneous helices. Relying on prior studies which highlight the importance of further research on women entrepreneurship, the present work aims to contribute to strength this field of research and aims to strength evidences on entrepreneurial initiative, since it is central to understand how to capture the vitality of this workforce to boost economic prosperity. Since women's participation in the workforce in the Europe is lagging behind many other regions, we expand the research by paying attention to the role of gender and culture as a predictor for starting a business, herein as entrepreneurial initiative/action. To this end, a logistic panel was employed, using data from the Global Entrepreneurship Monitor (GEM, 2015) combined with other sources.

According to Pines et al.(2010) based on several studies departing from GEM the rates of women's entrepreneurship are lower than men's. Although the results of the present study points into the same direction at least in some world zones, others factors are recognized as levers to boost entrepreneurial activity among women.

This study explores how policy might be redesigned to reinforce gender equality and diversity thus changing the institutional landscape to support a wider range of female entrepreneurship and enhancing the positive effects of these initiatives in terms of job creation, sustainability and growth. This paper challenges equality assumptions in policy design in terms of entrepreneurship, addressing the importance of building and strengthening of appropriate institutions for development, as the role of women in creating, running and growing businesses is central for economic growth. Therefore, this research opens up avenues for the development of women's entrepreneurship study focusing on effects along individual and environment level.

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PARALLEL SESSION 2

HOW FRUGAL INNOVATION CAN CONTRIBUTE TO TERROIR PRODUCT DEVELOPMENT? THE CASE OF COSMETIC OILS FROM MOROCCO

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Extended Abstract

Abstract

The objective of our research is to study how to innovate on terroir products at a low cost and to explain how communication through the Social Networks could enhance the value of these products while boosting their sale and making them better known to consumers. However, when we say "innovation" we automatically think of mobilizing large resources and investing in new technologies when this can be done with fewer resources while creating more value. In other words, it is frugal innovation which consists on doing more with less. Through an internal strategic diagnosis We discovered that this company suffers from several problems in its various functions and in order to remedy this, an action plan was implemented to prioritize the communication plan actions. We also made professional visuals for the two oils studied (Argan oil and Prickly Pear oil) in order to give visibility on Social Medias to these products. We bought a domain name on the Internet which purpose is to easily remember and communicate the address of a set of servers. We created a page on "Facebook" ...So we can deduce that innovating on terroir products only requires the mobilization of low-cost resources while limiting innovation costs. Because innovation that is always linked to economic and social growth and the race behind development can be achieved with cheaper financial funds.

Keywords: Innovation, Frugal Innovation, Terroir Products.

1. Introduction

Until few years ago, terroir products were, in general, neglected by consumers. Some were sold in their raw state at roadside stands and in outlying villages. Others were available exclusively in local shops, dressed up in shiny packaging. Nowadays, these products occupy a more prominent place in the daily lives of consumers, without the luxury of being able to acquire the value they deserve. This has prompted us to consider the following question: "How could frugal innovation contribute to the development of these terroir products?" The objective of our research is to study how to innovate an improvement upon these products at a low cost, and to explain how communication via Social Networks could enhance the value of these products while boosting their sale and making them better known to consumers.

2 Literature Review

It is first necessary to define the main concepts, namely the concept of innovation and that of the terroir. On the one hand, according to the OECD Oslo Manual, 2005. "An innovation is the implementation of a new or significantly improved product (good or service) or process, a new marketing method or a new organizational method in business practices, workplace organization or external relations". Thus, innovation is the successful introduction of a product to the market that is new or significantly improved over what existed before. Innovation depends on the context in which it is to be applied. For example, when organization of the main functions of a company is lacking, the latest technologies are not needed. The company simply needs to implement an appropriate organizational system. Western countries were used to an innovation model characterized by doing more with more via investing more resources to develop more technologies. Currently, an alternative model is emerging, the so-called frugal innovation model, which proposes to do more with less resources. On the other hand, according to UNESCO (2005): "A terroir is a geographical space delimited and defined from a human community that has built over its history a set of distinctive cultural traits, knowledge and practices based on a system of interactions between the natural environment and human factors". It should be noted that the frugal innovation seeks to enhance the use of local resources/ Promotes the expansion of knowledge/ Adequate with emerging economies" according to Navi Radjou (2013). This reminds us of terroir products using local resources and valuing them. In addition, they come from a recipe, know-how or traditional knowledge relating to the reputation, culture and history explicitly from the area of production.

3 Research Methodology

To answer our research question and the objectives set out in advance, we have opted for a purely qualitative method that seems to be appropriate for our research problem. Based on a single case study research method, it is a part of a more ambitious project that will use both qualitative and quantitative techniques. The case study adopted here is useful when a question "how" or "why" is asked about a set of events according to Robert K. YIN (1984). Based on available literature, two communities of researchers should be distinguished: the first stipulates that innovation in terroir products requires only the mobilization of low-cost resources while limiting innovation costs. The second community explains the opposite and stress the fact that major investments in innovation are essential and decisive in order to innovate on the terroir product. For them, innovation means technological progress. Hence, the need to mobilize significant financial resources. The studied range of terroir products is that of natural vegetable oils for cosmetic use, namely Argan oil and Prickly Pear oil, both of which come from the Moroccan region of Souss-Massa. The two oils benefit from a label called PROTECTED GEOGRAPHIC INDICATION, which implies a qualitative link that must exist between the product and its geographic origin:

- PGI "Sobbar Ait Bâamrane": (Sobbar means Prickly Pear) it is in April 2011 that the economic interest group Cactus Ait Bâamrane obtains the Protected Geographical Indication (PGI) "Sobbar Ait Bâamrane". The cultivation of this fruit represents 57% of the total agricultural turnover of the Moroccan region Souss-Massa, and 48% of the national production. The area covered by prickly pear amounts to 36,000 ha and increases by more than 4% each year. The cactus, prickly pear, or *Opuntia Ficus Indica* is a precious fruit to extract oil from it. It takes almost a ton of figs to obtain 1 liter of this oil. The geographical area includes: (Sidi Ifni, Sidi Ifni province and Guelmim province).
- And PGI "Argane": (Argane or Argan) this Protected Geographical Indication was obtained in 2009 and aims to promote the local product of Argan oil. The geographical area recognized by UNESCO includes 234 rural and urban municipalities in 9 provinces (Essaouira, Taroudant, Tiznit, Chtouka Ait Baha, Inezgane Ait Melloul, Agadir Idaoutanane, Safi, Chichaoua, Guelmim). As for the choice of our case, it is the company "AKHAKEBRO-GROUP", a very small enterprise (VSE) with a workforce of less than ten people. Created in 2015 and based in the city of Casablanca, the company is operating in the production and marketing of several varieties of natural vegetable oils for cosmetic use including the two we choose to study in this communication. Our ultimate objective is to analyze how low-cost (frugal) innovation was a key success factor in the growth of this company and the enhancement of its products.

In terms of data collection, two methods of data collection have been used, namely: A participant observation that allowed us to establish an internal diagnosis on the different functions of the company. A semi-directive interview completed our protocol of collecting data. This interview was structured and based on our research theme, in order to obtain information that will confirm the observations related to the internal diagnosis. The diagnosis concerned the following functions: sales, production, human resources, finance, and communication, on which the primary focus of this paper is built.

4 Discussion and Results

Regarding the fact that the company recently launched a cosmetic oil branded JOUR & NUIT with some spelling mistakes on the labels of oil bottles, catalogues etc., AKHAKEBRO-GROUP was not positioned to take advantage offered by the Internet and social networks. This deprived the brand of visibility from end customers. In order to remedy this, an action plan was implemented to prioritize the communication plan actions. Moreover, professional visuals are made for the two oils in order to give visibility on social medias to these products. We bought a domain name on the Internet, the purpose of which was to easily remember and communicate the address of a set of servers. For example, jourenuit.ma is easier to remember than 208.80.154.224. We created a page on "Facebook" which bears the name of the brand JOUR & NUIT with an online shop to view the product and all of its benefits, listed in the description box, in addition to the pricing information, which is also displayed. On Facebook we were able to sponsor a few posts containing the photo of the oil and its price.

All the actions summarized above had a positive impact on the notoriety of the terroir product, where the number of orders are both launched and increased. Among our innovative actions is the creation of an e-commerce site that has also served to display the various oils available to AKHAKEBRO-GROUP. A final action that has contributed more to the development of this brand is the role of opinion leaders to advertise oils, by their notoriety, expertise or their intensive social activity could influence the opinions or actions of many individuals. This has led us to omittance of the old method of external communication, namely distributing "Flyers" that few people read and move instead toward a new modern method of communication using the Internet as a cornerstone.

Having used a "Youtuber" or what is called "Influencer", which with a financial contribution praised the JOUR & NUIT oils in one of her videos posted on her YOUTUBE channel. After the upload of the video, we started receiving a lot of orders which boosted sales and allowed the company to create a significant profit margin. As far as distribution is concerned, frugal solutions have also been adopted, which is briefly reviewed in the following manner: replace B to B with B to C - the opening of a shop - the recruitment of a delivery person who will take care of the delivery of orders throughout the city of Casablanca - a contract with the postal courier service: in order to ensure delivery in other cities in Morocco and abroad etc.

These results confirm that innovating on terroir products only requires the mobilization of low-cost resources while limiting innovation costs. Innovation that is always linked to economic and social growth and the race behind development can be achieved with cheaper financial funds. Innovation must always consider the context in which it will be carried out. This is a small company producing natural vegetable oils for cosmetic use. It does not have large material resources, and, as a result, it needs to act on some functions (notably distribution and communication) through innovation. Hence, the use of innovative but inexpensive means. We can then deduce that nowadays digital has an essential role in advertising, which has largely surpassed the traditional media (television, radio, print media) which used to provide mass distribution, unlike online advertising, which allows targeted and qualitative dissemination. This digital advertising concerns search engines, social networks, websites.... In addition, advertising on social networks is not expensive but is effective in influencing the consumer. As in our case where this advertising had a positive impact on Argan and Prickly Pear oil by increasing their sales and raising awareness of the JOUR & NUIT brand.

5 Conclusions

However, It is apparent that this work had some limitations. No or less contribution to the innovation of all the aforementioned company functions presented in our internal analysis stemming from a lack of time and resources. On the other hand, recommendations are revealed on how to close the gaps and ameliorate each function. Also, we still act as participants to improve the processes of this small enterprise in the logic of trying to do whatever can be made with the scarce resources available to our partner.

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PARALLEL SESSION 2

A COMPARATIVE STUDY BETWEEN OPERABILITY OF FLUIDIZED BED AND FIXED BED REACTORS TO PRODUCE SYNTHESIS GAS THROUGH MISCANTHUS GASIFICATION

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Extended Abstract

Abstract

The development of alternative energy technologies can assist countries meet their policy demands for secure, reliable and affordable energy through broadening electricity access and stimulating development in both the urban and rural territories. Of all existing renewable energies, biomass is the resource with the most availability and greater versatility, which can play an important role in the development of a sustainable energy system. Biomass gasification is a widely used thermochemical process for obtaining products with more value and potential applications than the raw material itself. The aim of the present paper is to compare the performance of two gasification systems, fluidized bed pilot scale and fixed bed small scale, using agro-forest biomass derived by energetic crops, more specifically Miscanthus. Performance of the gasification process has been assessed with four measures, viz. molar content of H₂, CO and CH₄ in the producer gas, H₂/CO and H₂/CH₄ molar ratio, LHV of producer gas and overall efficiency of gasifier. The optimum sets of operating conditions for gasifiers for synthesis gas are: ER 1.6, Temperature 745 °C, LHV 7.27 for fluidized bed and ER 0.2, Temperature 740 °C, LHV 6.19 for fixed bed reactor.

Keywords: Gasification, fluidized bed, fixed bed, energetic crops.

1. Introduction

Renewable alternative routes for energy production appear as an important challenge to reduce the greenhouse gases emissions while meeting the growing world energy demand. Biomass gasification is an attractive way to convert a renewable resource into several energy carriers, such as substitute natural gas, bio-hydrogen, or Fischer-Tropsch biofuel [1]. The energy exploitation provision does not guarantee that the current situation will continue to be feasible at international or European level, as fossil fuel reserves are limited, due to this fact a new step has been taken in the research by sources alternatives for economic and environmental reasons. There are five compelling factors for greater use of renewable energy sources: increased energy security, depletion of conventional resources, climate change, new technologies and more environmentally conscious consumers [2].

The concept of bioenergy converges to solid, liquid or gaseous fuels. Liquid fuels can be used directly in the transport sector, as well as to produce electricity in power plants with engines and turbines. Solid and gaseous fuels can be used to produce electricity from power plants directly or indirectly designed by turbines. Chemicals can also be obtained by transforming the organic matter produced. In addition, energy and chemicals may come from the use of industrial, commercial or urban waste derived from plants, or from agricultural or forest residues [3]. As mentioned previously, the available biomass can be used as fuel directly, alternatively, it can be converted into liquid or gaseous fuels, later to be used as an energy resource to produce electric energy, heat, chemicals or liquid or gaseous fuels. There are different ways of converting biomass to biofuels and they are divided into two categories: biochemical conversion and thermochemical conversion. The widely known and developed biochemical conversion technologies are anaerobic digestion, saccharification and hydrolysis. Thermochemical conversion comprises five subcategories: carbonization, liquefaction, pyrolysis, gasification and combustion [4] [5].

Thermal gasification is referred to as a partial oxidation process in which the oxidizing agent reacts with the fuel to produce synthesis gas for use in an internal combustion engine or a fuel cell [6]. Two of the mainly used reactor types for biomass gasification are fixed bed and fluidized bed. Fixed bed reactors have a simple configuration and operation, high equipment efficiency, relatively low oxidant (oxygen or air) requirement, product gas at relatively low temperatures, thus no need for expensive high-temperature heat recovery equipment, feedstock flexibility: suitable to handle coals with high reactivity and moisture, high "cold-gas" thermal efficiency, when the heating value of the produced hydrocarbon liquids is accounted for, high methane content in product gas, long feedstock residence time in gasifier and slag flow characteristics require carefully controlled feed size distribution for proper operation, hydrocarbon liquids such as tars and oils are produced; increased effort to clean produced gas if it is used for applications other than direct heating [7]. Fixed bed gasifiers can be further divided as updraft (countercurrent) or downdraft (concurrent) (Ramos et al., 2018). In the downdraft gasifier both the fuel and product gas move downwardly, while the product gas exits at the bottom of the reactor at a higher temperature [8] [9]. In this case, most tars are decomposed because the gas goes through a combustion zone [10]. Downdraft configurations are thus beneficial for producing low-tar syngas and provide simpler operation, however, the produced gas generally has lower LHV [9]. In addition, downdraft gasifiers are not flexible in relation to the type of fuel to be used, presenting difficulties when handling unprocessed feedstocks[8]. A fluidized bed gasifier is load flexibility and high heat transfer rates, fuel flexibility, can gasify a wide range of feedstocks, moderate oxidant, uniform, moderately high temperature throughout the gasifier, higher cold gas efficiency than entrained-bed gasifiers, but lower carbon conversion [11] [12]. There are two types of fluidized bed gasifiers: circulating and bubbling, which differ in terms of fluidization technique. In bubbling configurations, the gasifying medium acts as the fluidizing gas, being introduced through the bottom of the reactor. This leads to a quicker mixture between fuel particles and bed materials and thus much faster heating of the fuel [9].Based on this, drying and pyrolysis reactions occur much faster when compared to the other gasifier type [13].

Since the reaction time is short, the tars formed do not have time to decompose and thus tar and particulates production is promoted requiring the assembly of cyclones in the gas outlet to retain such materials. Nevertheless, these reactors present advantages such as good flexibility regarding fuel loading and processing, being able to process a wide range of fuels with high ash content such as lignocellulosic biomass and municipal solid wastes [14].

The aim of this study was the miscanthus gasification, comparing the performances in terms of syngas between two different fluidized-bed and fixed-bed reactors. In the same context, the influences of parameters such as temperature, the influence of a catalyst and gasification sub products was achieved.

2. Material and Methods

This study was carried out using two plants of thermal gasification of biomass, a fluidized bed and fixed bed reactors, (as shown in Fig. 1 and Fig. 2). The process of thermal gasification by bubbling fluidized bed occurs through the addition of air and a catalyst (dolomite and/or olivine), burning some of the produced char and tar. For fixed bed reactor the oxidant agent was air and does not have any catalyst added to the process. Both experiments occur at temperatures approximately 750 °C, and the admission of atmospheric oxygen, in amounts below the stoichiometric reaction, which are favourable for the combustion of the remaining char and tar.

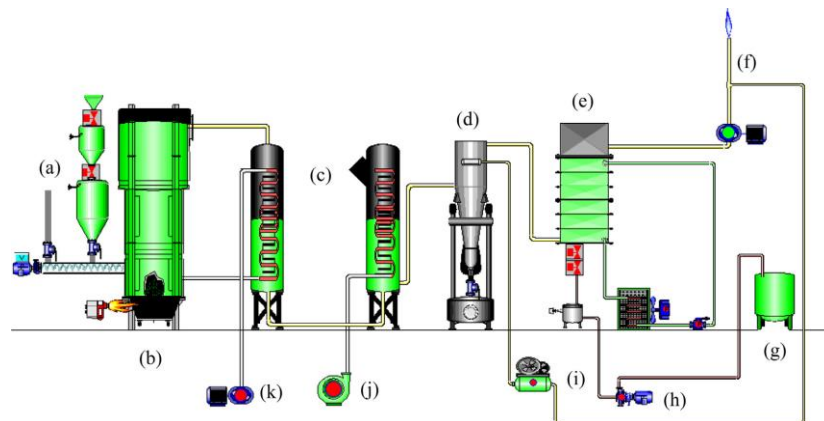


Fig. 1. Sketch of the fluidized bed reactor. (a) Feed system; (b) Bubbling fluidized bed gasifier; (c) Heat exchangers; (d) Bag filter; (e) Condenser; (f) Vacuum pump; (g) Condensate storage tank; (h) Tars pump; (i) Syngas compressor; (j) Air fan; (k) Air fan.

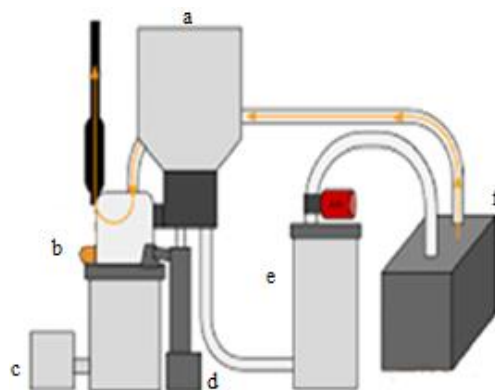


Fig. 2. Sketch of the fixed bed reactor. (a) Feed system (hopper); (b) Fixed bed gasifier; (c) Char auger; (d) Cyclone filter; (e) Biomass filter; (f) Engine + generator.

2.1. The gasification systems

Biomass fluidized bed gasification apparatus used in the experiment is depicted in Fig. 1. The system consists of two biomass silos, connected to a worm screw, which constitutes the feed system. The gasifier is 4.15 m high and 0.5 m wide, with an admission capacity of 100 kg/h of biomass, 50 kg of dolomite in the bed and 100 m³ of air inlet. The synthesis gas is cooled by two heat exchangers; one of them also responsible for the preheating of the air used as gasifying agent. The ashes and the unconverted carbon particles are removed in a bag filter. Another heat exchanger serves to remove tars from the system through condensation, which are then forwarded to a tank. The last organ of the system is a vacuum pump, which ensured total control of the system, and created a negative pressure gradient. Once the predetermined temperature and the biomass inlet flow were assured, the system stabilized for about two hours and then the test was started. The tests lasted for three hours each, with duplicate collection of the synthesis gas and accounting for temperatures, flows, chars and tars.

For the fixed bed reactor, was used a commercial biomass gasifier power plant, a PP20 designed and manufactured in California by All Power Labs Inc. The most relevant technical data along with the gasifier characteristics are illustrated in Fig. 2. The small scale allows sourcing feedstock near the power production site due to small biomass consumption, proven to be below 10 kg/h. Four main parts compose the machine: a 0.3 m³ hopper, where the biomass is loaded, a gasifier reactor with 1 m high and 0.3 m wide, where the thermochemical conversion of biomass takes place, a drum filter, where syngas is cleaned from particulate and tars, and an engine connected with a brushless generator to produce electrical energy. The first passage of the biomass in the reactor is the pyrolysis stage. A heat exchanger heated with the exhaust gases allows a pyrolysis reaction. Once pyrolyzed, the biomass reacts with hot air entering through air nozzles and generates a combustion zone where the pyrolysis tars are cracked producing hot gases. In the reduction zone, the gases react with the carbon to create CO, H₂ and CH₄ and other gases, whose composition will be discussed later. The part of the char that does not react with combustion gases is disposed of through an ash auger. The syngas passes through a passage between the outside wall of the reactor and the combustion zones, causing a heat exchange between the intake air and the outgoing syngas. Through a port at the top of the reactor, the pressure is checked. The port at the top of the reactor extends from the pyrolysis zone to just above the air nozzles.

2.2. Miscanthus chemical properties and elemental analysis

The equipment used to carry out the tests and the chemical analyses of the products, were a Thermal Analyser ThermoFisher Scientific Flash 2000 CHNS-O Analyzer, to determine the levels of C, S, N, O and H present in the chemical structure); a Calorimeter IKA C200, to determine the high heat value (HHV); a PerkinElmer STA 6000 thermogravimetric analyzer, to obtain the immediate analysis of the samples (moisture, volatile matter, fixed carbon and ash content) as well as the loss of mass profile as a function of temperature rise; a Varian 450-GC gaseous chromatograph with TCD detector, used for the identification and quantification of gaseous constituents CO, CO₂, H₂, CH₄ and light hydrocarbons present in the synthesis gas.

Table 1. Summarizes the results of the ultimate and proximate analysis and HHV of the biomass as received and dry ash-free basis.

Parameters	Fuels	
	<i>Miscanthus</i> (arb)	<i>Miscanthus</i> (dafb)
C	44.5	51.4
H	5.2	6.0
N	5.3	6.1
S	0.0	0.0
O	45.0	36.4
HHV (MJ/kg)	18.6	21.5
Moisture (%)	11.4	0.0
Volatiles (%)	64.4	57.2
Fixed Carbon (%)	22.1	42.8
Ashes (%)	2.1	0.0

3. Results

The following table (2) present the results obtained for the gasification in the two different reactors, namely, values of production, composition, lower calorific value (LHV) of gases and condensates as a function of the system used.

Table 2. Gasification results (Temp-Temperature; B. Cons- Biomass consumption).

Parameters	Units	System			
		Fluidized Bed Updraft		Fixed Bed - Downdraft	
		Test 1	Test 2	Test 1	Test 2
Temp. 1	°C	742	745	740	748
Temp. 2	°C	555	538	574	577
B. Cons.	kg/h	45	45	5	5
Air Inlet	kg/s	0.012	0.011	0.004	0.005
ER	-	0.158	0.149	0.201	0.225
Tars	(L/kg residue arb)	0.054	0.058	0.041	0.039
Chars	(kg/kg residue arb)	0.007	0.007	0.010	0.009
Syngas	m ³ /s	0.024	0.023	0.006	0.008
CO ₂	% mol	14.5	15.9	10.5	8.5
C ₂ H ₄	% mol	1.3	1.6	0.6	0.4
C ₂ H ₆	% mol	0	0.2	0.1	0.1
N ₂	% mol	48.2	43.1	52.4	54.2
CH ₄	% mol	5.1	6.8	2.7	2.1
CO	% mol	17.7	17	24.4	26.4
H ₂	% mol	7.7	9.9	12.3	10.3
LHV	MJ/m ³	6.35	7.27	6.19	5.77

A first analysis of the results obtained, is possible to demonstrate that the gas produced for both systems contain a greater quantity of Carbon Monoxide followed by Hydrogen, this situation occurred in all experiments of the tested, but more evident in the fixed bed reactor. With a smaller percentage in the syngas appears the Methane. The high percentage of Nitrogen is since both gasification has been carried out with atmospheric air.

An interesting aspect of the presented results is that, the fluidized bed reactor, which despite presenting lower production of Hydrogen and Carbon Monoxide, presents an appreciable percentage of Methane in the syngas composition. This small difference between both reactors leads to the calorific value of the synthesis gas of the fluidized bed reactor, being higher than the fixed bed reactor.

The molar ratio H_2/CO and H_2/CH_4 of the syngas obtained by fluidized bed and fixed bed gasifier is represented as showing in Fig. 3 and Fig.4.

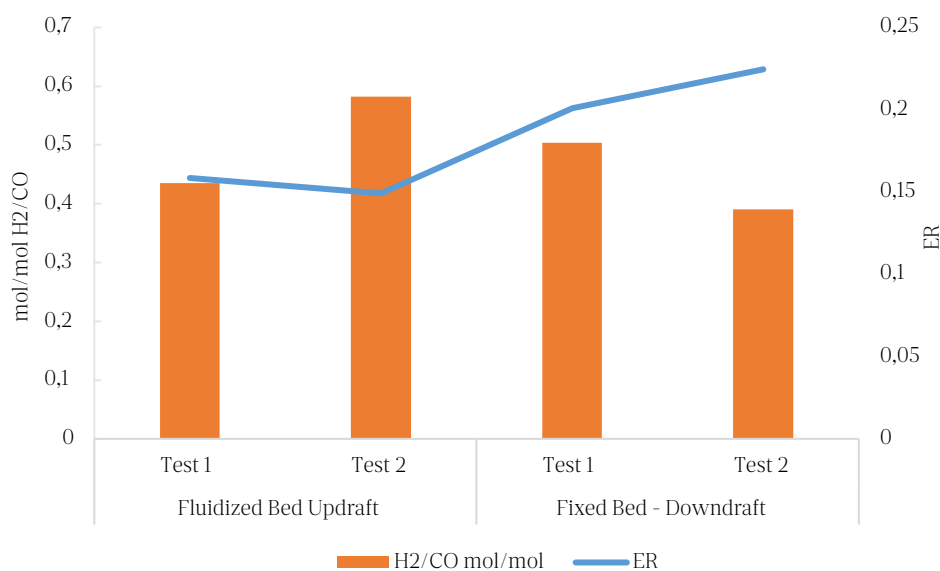


Fig. 3. Molar ratio H_2/CO vs ER.

Higher H_2/CO molar ratios don't necessarily mean that contents of CO and H_2 in syngas are also higher. It could well be possible that absolute production of CO and H_2 (in moles) is lesser for high H_2/CO molar ratio and vice versa.

For all tests in both reactors, higher H_2/CO molar ratios are presented for low ER ratios. Large H_2/CO ratios at low ER are attributed to very low production of CO. As temperature rises, more air is needed (higher ERs), and the production of CO will increase more rapidly than H_2 , and hence, the molar ratio falls. For all four tests, the minima were found to occur at ER 0.225.

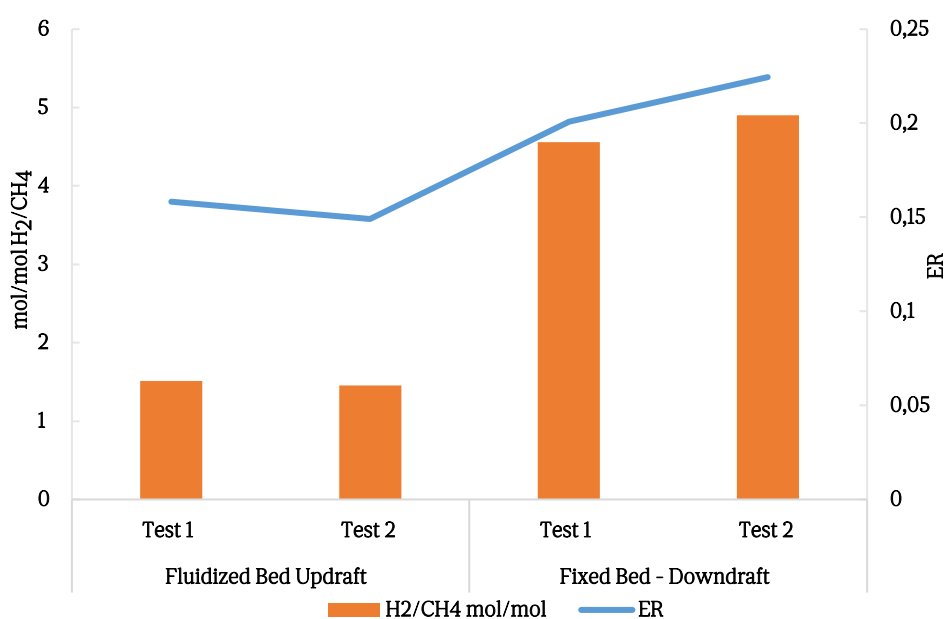


Fig. 4. Molar ratio H₂/CH₄ vs. ER.

For the molar ratio H₂/CH₄ and low ERs, significant fraction of carbon remains unconverted. For any gasification temperature, the fraction of unconverted carbon reduces with increasing stoichiometric ratio. Fraction of carbon getting converted to CH₄ is relatively small in fixed bed system. The highest production of CH₄ was seen for truly pyrolytic conditions in the fluidized bed system, ER near 0.15. With increasing ER in any gasification temperature, the fraction of carbon getting unconverted to CH₄ reduces. For high gasification temperature, total carbon is distributed only among CO and CO₂, with other two products, CH₄ and unconverted carbon, reducing to zero [15]. Methane molecules are mostly produced in fluidized bed reactors (7% vol.) compared to fixed bed reactors (1% vol) [7], therefore, the syngas obtained in the fluidized bed reactor has a higher H₂ / CH₄ ratio.

According the results presented and described previously, there are a portion of parameters that affect the composition of the syngas in both reactors. An example of the mentioned parameters that influences this product is the structural composition of the fuel, in this case Miscanthus, a lignocellulosic (lignin-rich) biomass. The fact of lignin, a refractory component of biomass, does not gasify well at lower temperatures, thermal gasification of lignocellulosic biomass prefers a minimum gasification temperature in the range 800 to 900 ° C [16]. The peak temperature of a fluidized bed gasifier is in the range of 700 to 900 ° C to avoid softening of bed materials. The exit-gas temperature of a downdraft gasifier is about 700 ° C, but its peak gasifier temperature at the throat is 1000 ° C. In this case there is a justification for higher cracking in fixed bed, because the peaks of temperature in this system are much greater than the fluidized bed, thus a higher content of H₂ and CO relative to the fluidized bed system.

Another parameter with great influence on the composition and quality of the gas is the residence time in the reactor, which is extremely relevant for the total conversion of lignin in lower molecular weight fractions. A lower residence time, as previously mentioned, in the case of the fluidized bed reactor, will allow a lower conversion of the hydrocarbons (considerable amount of CH₄).

Finally, in a large association and convergence with the two previous points, the equivalence ratio (ER) is fundamental to perceive some of the thermodynamics inside a reactor. How higher ER, greater is the oxidant concentration, also greater is the synthesis of hydrocarbons in H₂ and CO. This aspect becomes very evident in the fixed bed reactor (ER between 0.2 and 0.22), with high concentrations of H₂ and CO, in relation to the fluidized bed [17].

4. Conclusion

The present study compares the Miscanthus gasification indicators in a fluidized bed gasifier and a fixed bed gasifier. Results demonstrate the lower heating value of the Miscanthus syngas products are 5.77–7.27 MJ/Nm³, while higher equivalence ratio have negative impacts on syngas heating value. Furthermore, the fluidized bed generated more sub products, namely more tars contents per kg of biomass converted than the fixed bed system. Finally, although the fluidized bed gasification technology has better performance indicators, the fixed bed gasification method can produce syngas with lower LCOS (Levelized cost of syngas), which illustrates that fixed bed gasification is an economic pathway for the syngas product.

Acknowledgement

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PARALLEL SESSION 2

WORLDWIDE INNOVATION: PANEL DATA ANALYSIS ON THE IMPACT OF THE GEM'S BUSINESS ENVIRONMENTAL FACTORS

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Extended Abstract

Abstract

Innovation policy is a significant component of sustainable development. The successful increase in innovation needs to study what are the business environment factors that determine innovation activity. Such goal will be reached using the panel data methods applied to data provided by the Global Entrepreneurship Monitor (GEM). This study concludes that worldwide factors as financing, government support, lower taxes and bureaucracy, entrepreneurship education in primary and secondary levels and the country's economy openness present an important positive impact on innovation. The results are different if the analysis is made by level of income. None of the factors showed statistical evidence for low-income countries. Financing, basic school training and education, R&D transfer, and cultural and social norms have a positive impact on innovation in lower-middle-income countries. Financing, governmental support, reduced taxes and bureaucracy, and basic school training and education influence innovation activity in upper-middle-income economies. In high-income economies, present similar results.

Keywords: Innovation, Global Entrepreneurship Monitor (GEM), business environment factors, economies' income levels, panel data methods.

1 Introduction

Nowadays, the current phase of economic development cannot be interpreted without the contribution of innovation. According to seminal work of Drucker, innovation was considered as an idea converted into a business in order to create a value that would raise both the economic cost as well as the satisfaction of the customers. However, trends and demand are changing rapidly, requiring new ideas as well as new solutions for emerging problems. Hence, during the last years, business organizations evaluate innovation activity as a significant component of sustainable growing and development. Regarding the literature on the scientific area, innovation is assumed to be important not only for creating wealth in a narrow field of increased prosperity, but also enables humanity of creating something that was never done before. Several authors believe that innovation policy is capable of finding new solutions in response to problems, challenges or opportunities that arise in the social and/or economic fields. Furthermore, innovation, together with entrepreneurship, compose a root of economic growth, where the last can be responsible for wealth creation and redistribution and employment. At the same time, they stimulate a substantial increase of value for the customers. Successful innovation depends on the combination of capabilities, including access to financing, understanding market needs, recruiting high-skilled employees. Primarily, a key to successful implementation of the innovation is to reveal what are the main business environment factors that affect innovation activity in companies.

2 Literature Review

In order to obtain a more comprehensive overview of innovation in the business field, it is significant to determine which business environmental factors affect innovation activity. Regarding Katila and Shane (2005), the following environmental factors deemed to have an effect on the innovation activity: (i) degree of competition, (ii) availability of financial resources, (iii) manufacturing intensity of the production process, and (iv) size of the market. Law, Lee, & Singh (2018) point out the importance of the financing issue in supporting innovating – an efficient financial allocation facilitates R&D. Brown and Ulijn (2004), took into account the factors that influence organizations. These factors are related to a country specificity such as its; (i) financial system and corporate governance, (ii) legal and regulatory frameworks, (iii) level of education and skills, (iv) degree of personal mobility, (v) labour relations, and (vi) dominant management practices. Howell (2016) supported the idea of financing innovation in arguing that investments in intangible assets like R&D are quite vulnerable to financing as there is usually a strong need for purchasing high-tech equipment.

The role of government policies and support should not be underestimated while considering innovation. Discussing more obstacles of innovation there is a need to mention that high level of taxes may reduce firms' innovation as it decreases firms' internal cash flows, which assumed to be a major source of innovation financing (Howell, 2016). Relying on the literature review made by Francis and Bessant (2005) it is worth to mention that the relationships between innovation and bureaucracy are assumed to be negative. According to Baldwin and Gellatly (2003), that took into consideration, the growing small and medium-sized enterprises survey with the purpose of completing a more robust and profound report about the strategies and characteristics of SMEs. Small and medium-sized companies acknowledge the importance of government programmes which include training, industrial support and procurement. Finally, based on the innovation system capability investment framework, secondary level education was mentioned as one of the considerable components of it (Howard Partners, 2008).

3 Research Methodologies

Having in attention the abovementioned, the objective of the study is to reveal the business environment factors which influence the innovation activity in business in economies all over the world during a certain period of time. Innovation is not measured directly by the Global Entrepreneurship Monitor (GEM), however, a proxy variable will be used. The percentage of the companies involved in total early-stage entrepreneurial activity (TEA) which consider that their product or service is new to at least some customers and that few/no businesses offer the same product. In addition, it is significant to research in which degree each factor has an impact on innovation. It is believed that the identification and measurement of the business environment influencing factors for the innovation activity will help to detect, examine and discuss sources of problems and incentives which retard or boost, respectively, the innovation activity. During the research, it will be identified and quantified which business environment factors have a stronger influence on the innovation activity of new companies. By applying, simultaneously, space and time dimensions the research work will try to establish and measure possible causal relations between the business environment variables and the innovation activity of the companies.

The secondary data is applied on entrepreneurship and innovation on new created companies and the evaluation of the business environment by experts of the Global Entrepreneurship Monitor (GEM) regarding factors that may have a strong impact on the innovation activity in the scope of a business. GEM is a platform with a primary data, which has many benefits due to the public use availability, annual release of the global report on the entrepreneurial activity as well as the unique organizational structure of the projects, which includes the national experts in participating countries, who systematically provide the assessments of national entrepreneurship conditions and political characteristics.

The research will include all countries around the world in which public available and comparable data do exist. As time dimension the study will operate with the observation data on innovation activity of the companies from the period of time from 2011 to 2017. It is worth mentioning that for previous years, data indicators of innovation activity in the companies were not available in the GEM database, even if other indicators are available.

The current research work is deemed to bring some contribution as well as increase value of the GEM-based publications regarding the topic of innovation activity as, according to Bergmann, Mueller, and Schrettle (2014), there is a lack of GEM-based works covering the topic of innovation. The variable that will be explained, present the percentage of the companies involved in total early-stage entrepreneurial activity (TEA) which consider that their product or service is new to at least some customers and that few/no businesses offer the same product – this will be used as a proxy for innovation in the present work. The variables that will be used to explain the innovation activity in the companies are the ones that, according to experts, define the business environment of economies. These variables are the following: financing for entrepreneurs, governmental support and policies, taxes and bureaucracy, governmental programs, basic school entrepreneurial education and training, post-school entrepreneurial education and training, R&D transfer, commercial and professional infrastructure, internal market dynamics, internal market openness, physical and services infrastructure, cultural and social norms. The environment framework condition are measured in a 5 points Likert scale where 1 represents the lowest classification and 5 the highest classification.

Achieving the objective of this research work implies that a statistical descriptive and an econometric (inferential) analysis is carried out. With the help of descriptive statistics, it will be possible to execute the outlook of the overall performance of companies, among countries around the world and over time, which are engaged in innovation activity. Regarding inferential statistics, a panel data methodology will be applied, to explain why companies innovate over time around the world regarding a set of explanatory factors. According to Longhi and Nandi (2015), panel data allows to take into consideration the individual unobserved heterogeneity. In the particular case of this research work, panel data gives the possibility to examine the differences between the economies in analysis, over time. It is possible to apply such econometric techniques as fixed effects (FE) and random effects (RE) (which choice will rely on the Hausman test), even in case of repeated observations for the same individual, since longitudinal data analysis, as the panel data methods, enables to study dynamics as well as to measure changes (Park, 2011). These differences are indicated as individual-specific heterogeneity or time specific heterogeneity and they will be represented by the fixed parameters, thus the models are believed to have fixed effect (Bjørn, 2016).

In order to achieve more detailed analysis, there were created the division by the income level, which is based on the World Bank classification. The income level classification includes low income, lower middle income, upper middle income and high-income levels.

4 Discussion and Results

Current work examines 100 countries in a period of time of 7 years that comprises almost the second decade of the XXI century (more precisely the years of 2011 to 2017, as mentioned above). Such big number of countries can only be considered since the GEM database uses a common methodology to collect the data among countries and over time. Such common methodology allows to make international comparisons and apply longitudinal econometric research methods as the panel data methods.

Overall (this is, considering all the countries in analysis during the 7 years of study), in average, 25,7% of all 433 observations worldwide indicated that companies involved in early-stage entrepreneurial activities (TEA) indicate that their product or service is new to at least some customers and few or no businesses (at all) offer the same product. The standard deviation of innovation activity within a period of time is bigger than across countries. However, the standard deviation between observation reaches a relative value of around 40% of the average value (10,38% out of 25,7%), which indicates that a big variability can be observed for the 433 observations.

Regarding the results for the between and within observations, the variability of innovation among countries is bigger than the variability verified for each economy over time (the standard deviation (9,27%) between the groups of economies is bigger than the standard deviation (5,16%) within each economy over time). Moreover, the range between minimum and maximum values among groups of countries is much bigger than the range between these values within the economies over time. This indicates the importance of undertake an analysis that may divide countries in homogenous groups, like the division of countries by level of income.

When talking in account the factors that determine business environment, results provide evidence that the indicators related to physical and services infrastructure and the internal market dynamics present the highest overall assessment average values. The indicators that present the lowest overall assessment average values are the indicators related with the basic school entrepreneurial education and training (2,02%), the R&D transfer (2,35%) and the taxes and bureaucracy (2,40%). It is also important to notice that the average overall expert's assessment is for most indicators below 3 point values – only the 2 indicators abovementioned indicators with a higher assessment present an average overall assessment higher than 3 point values. However, the average hides the existence of big differences in the expert's assessment. Overall there are economies, in specific years, with a very low assessment. For instance, the indicator that measures the basic school entrepreneurial education and training reaches the minimum of 1,15 points and never reaches a value higher than 3,43 points. At the same time, the indicator that measures the cultural and social norms presents, according with the experts, an overall minimum of 1,64 points and a maximum assessment of 4,40 points. The indicators that measures the taxes and bureaucracy presents a behaviour similar to the cultural and social norms.

Also for these indicators, it is clear that the differences among groups is bigger than the differences among economies over time. Again, it shows the importance of making a division of economies in groups more homogeneous to understand better how the business environment indicators.

5 Conclusions

Generally speaking, it has to be noted that, while investigating the subject of innovation activity it is vital to observe the environment, which consist of business influencing factors, and which determines innovation. In other words, a particular attention should be paid to drivers and barriers of innovation activity. Consequently, this enables to identify the key impacts for innovation activity in the companies, and later respectively, strengthen or reduce them. Studying factors which form the area of influence on innovation activity gives a knowledge, which could be applied for enhancing innovation activity in organizations in general as well as in business companies. Regarding the studied topic of the innovation activity, current research greatly contributes to the scientific literature. Furthermore, based on the scarcity of the works dedicated to the investigation of factors that influence innovation, especially the ones that are based upon using GEM secondary database (Bergmann, Mueller, & Schrettle, 2014), a current research is considered to be valuable scientific work.

On the general analysis of innovation activity, it should be mentioned that, in average, about 26% of companies worldwide, involved in early-stage entrepreneurial activities (TEA) indicate that their product or service is new to at least some customers and few or no businesses (at all) offer the same product. Results also showed the noticeable variance of values indicating innovation activity – with a minimum value of about 1% and a maximum one of almost 59%. Regarding factors that determine business environment in general, findings present that the indicators related to physical and services infrastructure and the internal market dynamics showed the highest degree of influence, and the indicators related with the basic school entrepreneurial education and training, the R&D transfer and taxes and bureaucracy evidence the lowest degree of impact.

When considering the analysis by the division of countries by income level, it should be noted that companies operating in countries with higher levels of income tend to innovate more. According to the results, despite on the largest amount of observations, none of the factors presents evidence to explain innovation activity in low-income level countries. Perhaps, this occur because of top-priority willing of the survival of the company, which leads to the neglect of the SMEs in implementing any innovation (Lima & da Silva Müller, 2017). For the economies with a lower middle income level, the indicators related with financing, basic school training and education, R&D transfer, and cultural and social norms have a positive influence on innovation activity, which signify the importance of creation improvements and facilitation of the access of basic entrepreneurial education as well as transformation of social and cultural norms of the society, into the ones which encourage innovating. For the economies with an upper middle level of income indicators related with financing, governmental support and policies, taxes and bureaucracy, and basic school training and education indicated a positive correlation with innovation activity. Although, indicators related with market dynamics and physical services and infrastructure were found to decrease innovation. Hence, to grow the innovation, the physical infrastructure utilities in the countries with upper middle level should be financially affordable. For the counties with the high-income level indicators related with taxes and bureaucracy, commercial and professional infrastructure and market openness are deemed to enhance innovation activity. Whereas, the indicator related with market dynamics shapes the development of innovation activity negatively. Therefore, to increase innovation activity in high-income level countries, all the entrance barriers have to be erased.

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PARALLEL SESSION 3

SOCIAL ENTREPRENEURSHIP AS A WAY TO UPSCALE SOCIAL INNOVATION PRACTICES

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Extended Abstract

Abstract

In the last decade, the idea of social innovation has been around in different fields, as a way to empower people and communities to address and overcome important social problems. In this paper, an attempt to identify some barriers that may hamper the upscaling and diffusion of social innovation practices is made. Thus, the following research question is addressed: what factors hinder the wide dissemination (upscaling) of social innovations and how social entrepreneurship helps to address this barriers? To answer this research question, this paper offers a conceptual contribution for the identification and understanding of the barriers faced by the upscaling process of social innovations and argues that social entrepreneurship can be a solution to overcome some of those barriers. Using six case studies of social-change oriented social enterprises from Sri Lanka, we are able to identify the key barriers that exist to upscaling, in particular highlighting a “missing middle” in their growth and change processes.

Keywords: Social innovation, social entrepreneurship, social enterprise, social change, upscaling, case study.

1 Introduction

In the last decade, the idea of social innovation has been around in different fields (Cajaiba-Santana, 2014), be it on political, social or academic spheres, as a way to empower people and communities to address and overcome important social problems and challenges (e.g. social exclusion phenomenon, climate change, mass urbanization, migration, rising inequality in income distribution).

Departing from the idea that social innovation should be understood not as an output but as a process, Benneworth and Cunha (2015) proposed a non-linear model to explain the process of social innovation, bringing together three important features underlying that process: the progress of the innovation, the agency of the innovator, and the building up of the societal capacity. In fact, from a public policy design point of view, more important than identifying the output of a social innovation, is to understand the process that facilitates the emergence and dissemination of social innovations. However, it is increasingly recognized that the process of upscaling social innovations initiatives or practices faces important challenges and barriers.

In this paper, an attempt to identify some barriers that may hamper the upscaling and diffusion of social innovation practices and/or initiatives is made. Achieving an effective and sustainable social innovation implies that a successful upscaling process has been followed, contributing to systemic change. But this depends on the successful overcoming of barriers faced by the upscaling process.

The remainder of the paper is organized as follows. Next section, presents a brief overview of the literature about barriers on upscaling of social innovations. Section 3 the research methodology followed in the empirical study. A brief description and discussion of the main finding achieved is presented in Section 4. Finally, Section 5 concludes the paper.

2 Literature Review

Making a social innovative idea or project that is effective and feasible on a small scale take root in a totally different context and environment while retaining its effectiveness is not a simple procedure or endeavor. The upscaling of social innovations is usually constrained by a range of factors. Therefore, it is important to identify those factors that hinder the upscaling of social innovations. Successful and sustainable social innovation upscaling should be seen ultimately as both the wide diffusion of those innovations as well as the contribution to social change and a more inclusive society. From the literature, a number of barriers and difficulties to the process of upscaling of social innovations can be identified and, in this paper, we highlight five of them.

Firstly, the idea of limited representativeness. According to Dijk et al. (2018, p.4), in the context of social innovation, this means that the “design, conditions and results of pilot projects are of only limited applicability to new projects and therefore the usefulness of the pilot projects in new situations is subject to doubt”. Secondly, and strictly related to the previous one, is the idea that most social innovation practices or initiatives are context dependent (Benneworth & Cunha, 2015). In fact, the local circumstances where these innovations are developed condition and shape the morphology of the social innovation. Thirdly, a barrier to the upscaling of social innovation projects might be the inertia of stakeholders. The upscaling of those projects might be hampered by resistance from some stakeholders (maintenance of the status quo) (Dijk et al., 2018). Fourthly, some authors give emphasis to the tacit dimension of the social innovation process (Ambrosini & Bowman, 2008) and the fact that social innovation can be regarded as an example of hidden innovation (Spila, Echeverría & Unceta, 2016). Finally, transforming a social innovation project pilot in a large scale application and adoption usually implies that a set of important resources are available (namely, financial, human and material resources). However, in many circumstances, this might not be the case and the upscaling of the innovation might be compromised by this lack of resources (Bergman et al., 2010).

3 Research Methodology

The following research question was addressed in this paper: what factors hinder the wide dissemination (upscaling) of social innovations and how social entrepreneurship helps to address these barriers? To answer this research question, this paper offers some insights for the identification and understanding of the barriers faced by the upscaling process of social innovations and argues that social entrepreneurship can be a solution to overcome some of those barriers. Using six case studies of social-change oriented social enterprises from Sri Lanka, we were able to identify the key barriers that exist to upscaling, in particular highlighting a “missing middle” in their growth and change processes; whilst the social enterprises are clear on which problems they seek to address and the long-term desirable outcomes, they are less clear on the short- and middle-term steps they need to achieve those goals.

4 Results and discussion

Each of the cases that we have considered in this paper have been concerned with social exclusion that has been intertwined with a financial vulnerability; exclusion from market access has exposed the communities to financial volatility. The main inputs that have been used by the social enterprises are two-fold. Firstly, they are able to offer a series of more variegated pathways to markets that are more willing to pay a premium price for the product. Secondly, they use either part of the surplus or a pump-priming donation to help local excluded individuals participate and access in these markets, in creating products, in growing crops, in supporting their socio-psychological and economic-entrepreneurial development, through training, mentoring and advising activities. As a result of that, the rural residents with which these social enterprises have contact are able to produce premium accredited products, and the social enterprise provides access to wider markets in ways that allow a higher price to be secured. The social enterprise in turn ensures that higher paid price flows back to the rural residents in ways that ensure that the rural residents benefit from it, both in terms of immediately reducing household financial precarity, but also by ensuring that the surplus is invested in the development of these businesses.

5 Conclusions

Social entrepreneurship projects and social enterprises, with their capacity of adaptation and of shaping social change, may be one way to foster social innovation dissemination and upscaling. We argue that the findings achieved suggest that more emphasis needs to be given to the upscaling process in order to identify techniques and approaches to assist social enterprises to identify their necessary pathways to upscaling to ensure that their social enterprise efforts transform their intentions into social change. We conclude by arguing that better consideration is needed of these innovation pathways in social innovation and entrepreneurship to understand how these micro-enterprises can achieve a more systemic transformative effect. Additionally, this paper sought to contribute to the debate about the relationship between social innovation, social policies and innovation policies.

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PARALLEL SESSION 3

OPEN INNOVATION DYNAMICS - PORTRAYING THE UNIVERSITY-FIRM CONNECTION IN A REGIONAL BASE

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Extended Abstract

During the last decades the role of innovation and its frameworks has been changing exponentially. Even though, innovation remains determinant as a driver of firm performance (Latham and Le Bas, 2006) as it is a complex, cumulative, multidisciplinary disciplinary and dynamic process.

The dissemination of the digital revolution is accelerating science and innovation interconnectedness, industrial cooperation, and technological globalisation (West et al., 2014). Open innovation has become the new paradigm concerning innovation management (Du et al., 2014; Mina et al., 2014; Colombo, et al. 2014) bonding academic research and industrial procedures becoming central in the public policy agenda (Laursen and Salter, 2005, 2006; Gassmann et al., 2010; Huizingh, 2011; Salter, et al. 2014). And, the underlying condition for its implementation is to unfold innovation process to all relevant players such that knowledge can freely flow and be moulded into new assets, generating new commercial opportunities and leveraging entrepreneurial activity; the process encompasses extensive networking and co-creative collaboration among stakeholders.

Given the importance of developing innovative actions in a continuous base, open innovation strategies may allow for the cost reduction of innovative research (Kuratko et al., 1997), as the use of inflows and outflows of knowledge will accelerate internal innovation processes, boost the exploitation of spillovers (Le Bas and Scellato, 2014), rationalise the use of public funding (Hecker and Ganter, 2014) and deliver value to academic research (Altuzarra, 2017).

The seminal concept of Open Innovation proposed by Chesbrough (2003) consisted in transferring knowledge, expertise or even tangible resources from one agent or institution to another. Performance improvement should entail in the combination of either internal or external ideas, market approaches, cumulative capacity or expertise, such that rather than relying upon the internal resources, they should collaborate grasping exogenous creativity.

Over the last decade, the concept evolved from bidirectional and unidimensional relations towards dynamic, multidimensional innovative ecosystems. Therefore, at present most of the innovations arise from complex co-creation processes with contributions from the entire economic ecosystem. This process demands for absorptive capacity to enhance knowledge sharing, among firms, Universities, Governance and the citizens.

The process is not uniform as it can be outside-in, inside-out or coupled, depending on the context and the timing. Under the “inside-out” perspective, the diffusion of relevant knowledge produced inside the firm moves to the exogenous environment (Latham and Le Bas, 2006). The second, “outside-in”, depicts the absorptive capacity of the firm, benefiting from external spillovers (Hecker and Ganter, 2014).

Economies will continuously grow building and investing in innovative markets, innovation hubs and networks enlarging their productive possibilities. Open Innovation Strategies (OIS) will require harmonisation across the economic players to enhance productivity, profits and innovation rates; this is a challenge to Firms, Universities and the Governance.

Encouraging the territorial dimension of innovation is determinant to promote connections between the relevant players. Innovation systems comprise a number of elements and connections, their social interaction which shapes the learning processes and information flows, which may result in innovations (Lundvall, 1992). Learning is vital in the system, which will promote the accumulation of technological capabilities and the interactive nature of knowledge accumulation based on the connections among actors involved in the innovation process (Lundvall, 1992; Nelson, 1993); interventions are “interwoven into the economic fabric” (Boekholt and al., 2001). Later, Arnold and Kuhlmann (2000) highlight as system elements: demand for innovation, framework conditions (regulations and tax system), industrial systems (large SMEs and start-ups), education and research systems, intermediaries, governance and infrastructures, venture capital and standards. They can reinforce each other, but can also block each other jeopardizing the development of the innovative process.

There is a long list of theoretical proposals disentangling the organisation of the innovative process: from the systems of innovation (Lundvall, 1992; Edquist, 1997), the triple helix model (Etzkowitz and Leydesdorff, 1997), circulation in triple helix (Etzkowitz and Zhou, 2007; Dzisah and Etzkowitz, 2009), which allows for knowledge to flow and promotes innovation dynamics. In the same vein with with other systematic approaches of innovation (the national innovation systems of Lundvall (1992) Edquist (1997) and or the regional innovation systems of Cooke et al. (1997) and Braczyk et al. (1998), the triple helix depicts connections among different agents in the innovation process, highlighting the interaction between them.

This proposal relies on an evolutionary perspective which describes a constant and flexible connection among agents. The first version of the model (Leydesdorff and Etzkowitz, 1996) described and characterised the interactions between helices (university-firm-government) along the innovation process. Then dynamic role of each one will influence himself and the others (Etzkowitz, 2003); and its evolution will vary among regions according to the profile of “innovation manager” (Ranga et al., 2008; Alberto and Ferreira, 2010).

In a knowledge based environment, the triple helix dynamics highlights the complexity and multidisciplinary of the innovation process. (Leydesdorff and Zawdie, 2010). The role of Universities in the promotion of regional development has been widely acknowledged in the academic and political arena. Concepts such as ‘innovation systems’ (Lundvall, 2007), ‘learning regions’ (Florida, 1999; Morgan, 1997), ‘innovative milieu’ (Oliver, Crevoisier and Camagni, 2001) have stressed the systematic connections among territorial actors, including universities, in generating innovation and comparative advantages. There are several studies aimed at understanding the drivers and constraints underlying the engagement of universities in the territories where those are based (Boucher, Conway, and Van Der Meer, 2003; Foray et al., 2012; Goddard & Puukka, 2008).

Universities have moved a long way from their historically criticised mind-set of ‘ivory towers’ in isolation from the economy, towards a more collaborative positioning within innovation ecosystems. However there is still room to improve interactions with other players (Etzkowitz et al. 2000). They must involve themselves in socio-economic development and boost the usefulness of their research.

Universities have the largest heritage in terms of knowledge, technologies, digitalisation and even artificial intelligence and intangible resources that should be transversally used to support innovation and growth. Given the efforts of taxpayers to fund Universities, as a societal investment in the production of knowledge on behalf of society, there is a need to increase the usefulness of academic research; and their role as co-creators and interactive partners in the system. Incentives must be designed to promote co-creation capabilities inside the academia and knowledge proximity to transmit this knowledge the absorptive capacity of academic knowledge within firms. Public policy must reinforce 'good' governance practices of universities as knowledge centres (European Commission, 2013).

Entrepreneurial Universities are the core innovative ecosystem according to the Triple Helix, given their importance in the knowledge society. New institutional connections and social formats will emerge combining the three helices promoting the erosion of their boundaries and their hybridisation to accelerate production, transfer and knowledge application (Etzkowitz, 2003). Moreover, businesses are also in transformation, along with other users of academic knowledge; they are increasingly collaborative innovators and targeting breakthrough and radical innovations around products, services, technology and business models (PWC, 2013).

Accelerating the development of Universities as innovative and entrepreneurial institutions will enhance Triple Helix interactions. Open Innovation and the Triple Helix have put even more centrality to collaboration, cooperation and unbounded knowledge production. It is decisive for policy makers to impose new challenges to firms, the academia, financial institutions, intellectual property providers, and government to work together. If this paradigm is applied the multiplier effects of the educational policy, innovation funding and the three University missions will rise.

A mainstream vector in innovation policy is the 'systems of innovation' perspective, which relies on the assumption that innovation is an interactive process. Accordingly, this approach is focused on the importance of connections which are essentially nationally oriented. These actions influence the different functions inside the systems (Edquist and Johnson, 1997) by means of uncertainty reduction (providing information, fostering cooperation, or offering incentives for innovation). This requires a multi-level policy action. The finest policy mix is not a one-off exercise, it is a continuous process harmonising the dynamics of innovation systems (OECD, 2010). Smarter and clearer policies should strengthen the links between universities and the ecosystem promoting the consolidation of the innovative community. The absorptive capacity of the firm must also be included in the policy equation. Albeit the importance of funding devoted to the promotion of industry-science links, this instrument must be accurately used. Different policy instruments have different effects on the innovation activities of firms, and, indirectly, with the other elements of the innovation system. So, providing a one size fits all model may become ineffective. The challenge of designing a smart, broad and effective innovation policy-mix is complex, albeit is centrality.

The empirical study conveys the Portuguese continental territory. A questionnaire was sent to firms in all regions address OIS patterns, cooperation with the university and other public institutions. Nearly 900 valid responses were considered, including all economic sectors. To verify the hypotheses, multiple regressions are run. The regional effect of the Universities and Knowledge Laboratories as centroids is measured and the sectoral patterns of the collaboration are highlighted along with other structural characteristics of firms and its role in the innovative process.

The paper is organized as follows. Second section presents a brief literature review, a model of University-Firm linkages and open innovation strategies, and the hypotheses in test. The third section provides the methodology. Fourth section presents the data, with descriptive statistics and the main results. Finally, fifth section offers conclusions, policy recommendations, limitations, and future research directions.

Keywords: open innovation, University-firm, triple helix, spatial econometrics

PARALLEL SESSION 3

SOCIAL INNOVATION: A SYSTEMATIC LITERATURE REVIEW

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Extended Abstract

From its beginnings, the human species has been able to create tools and utensils useful for their day to day life. Since the times of ancient Greece, manual and intellectual works have been seen as opposites. Theory was valued towards practice (Godin, 2006). The appearance of the city, arising from the continuous impulse of innovation, represented (in the ancient world) the possibility of a world away from nature, where more energy, more technique and organization are always required, and where in some way the principle of disorder is always present. To rely on innovation was to set in motion a principle that did not self-regulate as it did in nature (Martinez & Scalzo, 2015). World War II brought a new world order. In the early 1940s, the federal government of the United States of America began to foster scientific and technological development through grants and research contracts in order to broaden the opportunities for technical careers and to accelerate the process of innovation. In this respect the Device Research Conference (DRC) opened in 1942 played a key role. There many innovations were first presented (Franklin, Jena, & Akinwande, 2017). Public and private investment in innovation has produced antibiotics, vaccines, electronics, computers and has been promising cheap nuclear power.

With the rise of the personal computer, and the biotechnology industries in the 1970s, small-scale private innovation got its impetus. Entrepreneurs were encouraged by the promotion of the free market of capitalism, by government policies that encouraged deregulation, or by transferring universities to small businesses from practical knowhow acquired through federal support. Innovators have created high-tech start-ups that have helped redesign the technology landscape. (Kevles, 2015).

Innovation has been highlighted by economists much because of the increasingly frequent technological advances and supported by the ever increased demand for economic benefits at all costs. For postmodern economists like Keynes or Schumpeter, economics is not a closed conservative system that maintains a balanced, optimal state of social welfare. The economy can invest both on the good side and the bad side, always in an unpredictable way, in face of which they not only recognize the importance of innovation, but also consider it essential to explain the always unexpected character of the economy and the companies (Martinez & Scalzo, 2015). Schumpeter, influenced by Max Weber (who was in turn by the liberal Protestantism of Harnak) saw innovation as a divine gift, a boldness of creativity that allows a new beginning of the story, but in reality it is not known where it comes from (Martinez & Scalzo, 2015). One of the first concepts to perceive the relationship between science and technology for economics was the linear model of innovation. This model recognise that innovation begins with basic research and then goes to applied research, development, ending with production and diffusion (Godin, 2006).

Social innovation (SI) has not for a long time been taken into account as a very conducive field for innovation, very much owing to the prominence of the linear model (research + development + information). This concept believes that scientific research and technological developments, together with their implementation by companies and their diffusion in the markets (I), are the only sources of innovation (Puelles & Ezponda, 2016). Today the paradigm is changing and European policy makers have tried to define and promote the concept of SI (Hubert, 2010).

In fact, the notion of innovation is no longer just and only aimed at responding to the problems of market competitiveness, technological advances in the most varied areas from medicine, sciences or even military industry. The idea of innovation is increasingly being referred to in order to tackle social issues in search for improving the quality of life and society. It is already conceded that various social actors can be innovative and not only companies (Puelles & Ezponda, 2016). As we can verify despite all investigations on the concept of innovation and SI, this field of study still needs a theoretical systematization, because it is very fragmented. Given this fragmentation, our goal is to develop an intellectual mapping on the concept of SI. In order to carry out our aim, we will elaborate a systematic literature review in order to approach the concept of SI, both in its current state of art, in its origins, in its agents, in its contemporaneity, its differences with other forms of creativity, political theoretic and finally the evolutionary perspective.

NESTA website distinguishes SI from entrepreneurial innovation. SI is described as a cultural bias, emphasizing the ideas' importance and a vision of how things could be different and better, for example, by attending human and society not attended needs; while business innovation is driven by the market and consumers. Yet, SI concept can be considered as an innovation which provides social benefits, in addition to guarantee some commercial, technologic, organizational or scientific goals (Dawson & Daniel, 2010).

World is changing. Climate change, is without any doubt, the stronger pressure to SI in a global scale, improving its changing potential, as for academics (Scott-Cato & Hillier, 2010), been urgent things been done differently (Lettice & Parekh, 2010). SI is a multidisciplinary concept that has found resonance in various academics' disciplines and political circles in the last's years. It also has a prominent role in the Europa Union 2020 targets (20-64 years activity rate increase to 75%, school dropout reduction to 10%, poverty reduction, ...). SI notion was presented to pursue extreme ambitious goals. Grimm et al. (2013) refers that SI concept offers solutions to some most urgent society challenges. Yet, so far, there's only a limited evidence that SI can or had meet some self-promises. Due to the absence of a clear theory, and a rigorous base of evidences, (Grimm et al., 2013), it's difficult to judge in what extent SI can develop sustainable responses to answer to social challenges of 21st century.

As SI concept is a system modifier (MacLean, Harvey, & Gordon, 2013), perspectives for future research are opened to academics. This investigation intended to do a state of the art about innovation literature evolution since its origins to the SI notion (recent) emergence. We find that this concept lays in supranational and transversal values, in conclusion universals that emerge with evolution, not always in the most desirable way, of the society. The government support failure to needy people, to environment protection created a vacuum exploited by people and organizations (with profit or not), that stand out by remarkable actions in favour of the communities' welfare they belong.

This thought makes clear that SI notion has a lot to give, either in practical protection of environment, aid to disadvantaged populations, through social inclusion, social entrepreneurship conjugation to low density territories, or in scientific camp.

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PARALLEL SESSION 4

THE IMPROVEMENT OF THE SUPPLY CHAIN CHANNEL BASED ON DIGITAL TRANSFORMATION: AN EXPLORATORY STUDY IN THE SUSTAINABLE INDUSTRY 4.0

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Extended Abstract

Abstract

The Supply Chain developed extensively in Portugal over the last ten years. When we approach this term we involve three crucial areas that integrate the organizations, are them, the purchase area, production area and the distribution area, to which we commonly call logistic area. We are moving towards an all-digital era, with this study intends to understand how the Industry 4.0 concept has impacted the Portuguese business fabric, including the study in the purchase area. Process transformation, has led us to discover new forms of digital technologies in product processes in order to generate market competitiveness. The new business models are a driving force for the evolution and progress of the digital age. These models build on the pillars of Industry 4.0, bringing sustainability to the industry, reducing waste and predicting more accurately the market.

Keywords: Industry 4.0, Supply Chain, Digital Transformation, Smart Factory, Disruption.

1 Industrial Revolution

The first Industrial Revolution began somewhere between 1760 and 1840 in England, with the progressive replacement of machinery and tools by the exploitation of coal as an alternative energy to wood and other biofuels, and by the increasing use of steam energy. Changes in production processes have had significant economic and social consequences. The artisan who until then controlled the whole production process, from the exploitation of the raw material to the commercialization of the final product, went to work for a boss who controlled the process, the raw material, the final product and the profits. In the decades that followed and roughly until the end of World War II, developments were significant within the area of industries such as chemical, electrical, and steel. The first steel boats were launched by powerful steam engines, revolutionizing the transport of goods. There were also the first production lines that would allow mass production and low costs. The invention and innovation went hand in hand in this was the second Industrial Revolution. In the 1950s and 1970s, we began designing what was to be considered the third Industrial Revolution, the digital revolution, with the proliferation and use of semiconductors, computers, automation and robotization in production lines, with stored and processed information in a digital form, communications, mobile phones and the internet (Schwab, 2017).

1.1. Supply Chain

The largest global organization of practitioners and academics in the area, the Council of Supply Chain Management Professionals (CSCMP, 2010), which defines that supply chain management, involves planning and managing of all sourcing and procurement activities, conversion, and all logistics activities. It is important to note that supply chain management involves coordination and the search for collaboration between chain partners, whether they are suppliers, logistics service providers or customers.

Since the 1990s, it has become evident for those companies with already high levels of logistics maturity that, in order to continue to achieve gains in terms of quality, time, cost and asset utilization, it is necessary to look at the supply chain as a whole rather than maintaining an internally focused view. Thus, a concertation with the business partners involved in the supply chain is required: namely with customers, suppliers, logistics providers, among others, and a capacity for integration of information and planning. (Carvalho et al, 2017).

It is possible to define logistics as a process of managing flows of products, goods and services, with all associated information, reaching customers wherever the products and services they need, under the best conditions (Moura, 2006). Business logistics is a relatively new field of study of integrated management, traditional areas, finance marketing and production. The novelty derives from the concept, that logistics adds value to essential products and services, to consumer satisfaction and increased sales (Ballou, 2006).

According to Tjahono et al. (2017), the introduction of Industry 4.0 has a huge impact on the entire supply chain. Collaboration between suppliers, manufacturers and customers is fundamental to increase the transparency of all stages of the logistics process, from when the order is received until the delivery of the product. In addition, due to the introduction of digitization and process automation, the supply chain management (SCM) structure needs to be redesigned. In order to understand the opportunities and threats possibly from the introduction of these new technologies, it is therefore necessary to analyze the impact of Industry 4.0 on the supply chain as a whole. Logistics deals with the creation of value, for the customers and suppliers of the company, and value for all those who have direct interests in it. Products and services are worthless unless they are held by customers when (time) and where (place) they intend to consume them. Good logistics management perceive each activity in the supply chain as a contributor to the value-adding process. When the added value isn't very expressive, the existence of this activity becomes questionable. However, value is added when consumers are willing to pay, for a product or service, more than the cost of making it available to them. Logistics has become an increasingly important process of value adding, for countless reasons (Ballou, 2006).

According to Carvalho et al. (2017), Logistics promotes competitiveness, not necessarily through isolated companies, or earlier through departments and areas of isolated companies, but rather in collaboration. When it is possible to share resources between them and competences in a supply chain or network of companies, it is only natural that the demand for competitive conditions and competitive advantages can be made jointly between cooperating companies. This is effectively how the logistics can open a window of opportunity to the creation of joint competitive advantages, promoting competitiveness. At bottom, the logic is that of collaborative competitiveness, although not forgetting the conditions of competitiveness.

In the background, the logic is the determination of competitive advantages in a co-competitive way. According to Klaus Schwab (2017), in his book "The Fourth Industrial Revolution" there are four main changes expected in Industry in general:

- Changes in customer expectations;
- Smarter and more productive products;
- New forms of collaboration and partnerships;
- The transformation of the operational model and conversion into a digital model.

Moura (2006) emphasizes that Information and Communication Technologies (ICT), facilitates the coordination of information flows throughout the logistics system, with an impact on its performance, in particular on continuous improvement. The use of ICT in logistics is wide, covering the entire scope of its operations, from provisioning to physical distribution, through support to production operations. Glas and Kleemann (2016), thus characterize one of the functions that are part of this strategic chain: purchasing as the interface for the supply chain is of great importance in the digitization era. This will help to explore the phenomenon of industry 4.0 from this function, and the real objective is to analyze this impact and develop a conceptual basis, so that it can sustain the growth of some of the concepts such as Procurement 4.0.

Integrated supply chain management

Purchasing and supply chain management today reflect an increasing emphasis on the importance of suppliers. Supplier relations are changing with the aim of cooperating with selected suppliers. The activities that the modern purchase organization must implement are quite different from a few years ago. Supplier development, supplier design engagement, use of full-service providers, selection of total cost suppliers, long-term supplier relationships, strategic cost management, enterprise resource planning (ERP) and integrated Internet connections and shared databases as ways of creating new value within the supply chain. Buying behavior by costumers is changing dramatically to support the performance requirements of the new era. It is possible to reach three conclusions about 21st century purchases. First, the reshaping of the role of purchasing in the emerging global economy is underway in response to the challenges introduced by global competition and the rapid change in technology and customer expectations. Second, the overall importance of the purchasing function is increasing, particularly for companies competing in sectors characterized by global competition and rapid change. Thirdly, purchases should continue to become more integrated as regards customer requirements, as well as operations, logistics, human resources, finance, accounting, marketing and information systems. This evolution will take time to fully occur, but integration is inevitable. The history and evolution of procurement management and supply chain, brought an appreciation, development and increased relevance of the profession in the last 150 years. Each historical period contributed in a unique way to the growth of the procurement area, including the events that shaped the current emphasis on integrated supply chain management. (Monzcka et al, 2009).

Lean supply chain

Lean supply chains originate from the just-in-time philosophy, first adopted by American and European companies in the late 1980s. Just-in-Time (JIT) is a manufacturing philosophy based on the planned elimination of all wastes, and continuous improvement of productivity. It includes the successful execution of all operations activities required to produce a product, from project engineering to delivery, and includes all steps of converting raw material into finished product. The Just-in-Time method must have only the necessary stock when needed; to improve the quality to zero defects; reduce waiting times, queue lengths, and batch sizes, do an incremental review to the operations, and carry out these activities at a minimal cost. In the broad sense, it applies to all forms of production - job-shop, process and repetitive - and to many service industries as well.

Companies that follow the JIT philosophy often experience remarkable improvements in their productivity (outputs/raw materials), stock levels and quality. To understand why the JIT caused such an impact we can consider the example of Toyota that brought a manufacturing revolution in the late 1980s, early 1990s. Toyota's factory needed fewer hours and lower stock levels to make its job. This ability to do more with less has led many people to refer to JIT as lean production. Likewise, the concept just-in-time reflected the idea that the time and level of stock and production activities are closely related to demand. With average stock levels of only two hours, the Toyota plant was clearly only receiving parts and materials before they were needed.

The underlying emphases of JIT - to eliminate all forms of uncertainty and waste - are relevant to all organizations, regardless of the specific planning and control tools used. Second, although some techniques such as Kanban are not adequate, in certain production environments, it is quite possible that an organization can follow the JIT philosophy. (Monzcka et al, 2009).

1.2. Industry 4.0

According to Schwab (2017), in Germany the term Industry 4.0 appeared at the Hannover Fair in 2011, an expression that describe how this revolution is characterizing because it is based on transformation and digitization. Schwab (2017) argues that the fourth industrial revolution will bring about an inescapable change through technology, innovation and disruption. Schwab (2017) argues that all innovations and technologies have one fundamental feature in common: they leverage the power to disseminate digitization and information technology. All of the innovations described in this chapter are possible and enhanced through digital capability.

In addition to changing patterns of growth, the labor market and the future of work that naturally influence all organizations, there is evidence that the technologies that underpin the fourth industrial revolution are having a significant impact on the way companies are managed, organized and equipped.

The first imperative of the commercial impact of the fourth industrial revolution is the urgent need to look at the organization with the premise of constant learning and change. Is there a history of rapid prototyping and investment decision making? Does culture accept innovation and failure? Everything we see indicates that the race will only accelerate, the changes will be fundamental, and the journey will require a hard and honest look at the ability of organizations to react with speed and agility.

Multiple sources of disruption trigger different forms of business impact. On the supply side, many industries look to the introduction of new technologies that create entirely new ways of meeting existing needs and significantly change existing value chains. The widespread adoption of 3D printing will make distributed manufacturing and the maintenance of spare parts easier and cheaper. Real-time information and knowledge will provide unique customer information and asset performance that will amplify other technology trends. Disruption also results from agile and innovative competitors who, by accessing global digital platforms for research, development, marketing, sales and distribution, can outperform established companies faster than ever before by improving quality, speed or prices. This is the reason why many business leaders consider their biggest threat to be competitors who are not yet considered as such. It would be a mistake, however, to think that competitive disruption will come only through startups. Digital transformation also allows large installed operators to overcome the barriers of their industry, leveraging their customer base, infrastructure or technology. Dimension can still be a competitive advantage if harnessed intelligently. Major changes on the demand side are also shifting business: increased transparency, consumer commitment and new consumer behavior patterns, increasingly built with access to mobile networks and data, force businesses to how they design, market and deliver new or existing products as well as services.

Industry 4.0: Implications for logistics management

According to Hoffmann & Rüş (2017), the objective is to answer the question: can Supply Chain be affected by Industry 4.0? We can include two dimensions:

(1) The size of the physical supply chain: autonomous and self-controlled logistic subsystems such as transport (e.g. through autonomous trucks), turnover handling (e.g. by unloading robots or part removal) or order processing, through smart contracts in blockchain technology are interacting with each other.

(2) The dimension of the digital data value chain: the data of the machine and the sensor are physical processes throughout the supply chain. Through a layer of connectivity data collected are provided for any type of analysis (e.g. in the cloud), possibly resulting in potential value-added deals.

From this two-dimensional application model, three customer value components are expected. First, the "value of availability", which means making products and services available to the customer through autonomous delivery. The creation of value through the availability of goods or services is the main added value of logistics activities and services.

Second, the "value of digital integration" comes through permeable transparency and traceability throughout the supply chain. In addition, order processing systems are interconnected, making it easy to run business without interruption (e.g. self-service of objects, remote uses, or condition monitoring).

Third, consumption normally exceeds the classic Point of Sale (POS), but doesn't mean that the supply chain ends at that point. There are a number of IT-based service options that go beyond simply distributing physical products or services ("value of digital service"). In addition to things with a digital load where physical products are loaded with additional digital services, the data itself creates value out of the original use case ("sensor as a service").

1.3. Changes and Challenges

Perez (2010), quoted by Santos & Lima (2018), concludes by pointing out that each economic and industrial revolution brings new challenges and determines new approaches within organizations. Companies wishing to travel the industry 4.0 should assess their capabilities and adapt their strategies to implement it in the appropriate scenarios. Overcoming these challenges will involve meeting certain requirements such as: addressing security and digital protection issues; standardization of communication interfaces; processes and organization of work; availability of trained labor force; insertion of Small and Medium Companies (SMEs); training and professional development; technological base; research and investment (European Parliament, 2016). Therefore, while some companies are eager to introduce new technologies and improve the quality, efficiency and effectiveness of resources, reduce risks and remain competitive on the market, the lack of a clear understanding on the subject hampers the path companies that intends to embark on this new approach.

In short, we will have the following challenges:

1. Use collaborative methods to foster innovation, which will allow disruptive innovations in a shorter period of time.
2. Combine flexibility and efficiency in productive methods.
3. Manage smaller series with shorter response times, which implies a greater logistical and coordination effort.
4. Adapt more efficient and advanced logistics models.
5. Adaptation to the transformation of channels: digitization, multi-channel and omni-channels.
6. Leverage the information to anticipate the needs of the customers which implies the theme of Big Data, with data collection and its treatment through advanced analytical methods.
7. Adaptation to the hyper connectivity of the customer which means an ever greater digital interconnection between people and things, at any time or place.
8. Manage the tracking (traceability) of products along the entire value chain.
9. Manage the specialization through the coordination of value chains.
10. Ensure sustainability in the long term, this notion of sustainability is economic, financial-energy (energy efficiency), optimization of resources, minimization of waste generation in order to have sustainable products.
11. Offer customized products which implies a greater number of references, smaller volume of each series and reduced response times.
12. Adapt the product portfolio to the digital world, which implies both the digitization of current products and the production of new digital and intelligent products, as in the technical textiles and intelligent fabrics that use nanotechnology and apply sensors to provide additional functionality. (European Parliament, 2016).

2. Literature Review

2.1. Industry 4.0 Digital Enablers

Cyberphysical Systems (CPS): Hoffmann & Rüş (2017) argue that industry 4.0 is characterized by an unprecedented internet connection or other and so-called CPS, which can be considered systems that integrate two strands; the physical world and the virtual world. Cyberphysical systems are computational integrations with physical processes. Embedded computers and networks monitor and control physical processes. In the industrial context it means that information related to the shop floor and virtual computing is highly synchronized.

Internet of Things (IoT): Porter and Heppelmann, (2014), explain that the term "internet of things" has become popular in the first decade of the twenty-first century and can be considered the initiator of Industry 4.0. Smart products offer exponential opportunities through new features, increased reliability, greater and better use, and capabilities that transcend the traditional boundaries that are usually associated with the products we have hitherto known. In addition IoT seems to envisage a society where all members have access to a full Internet in an environment filled with self-configuration, self-management, intelligent technology anytime, anywhere. It is hoped that IoT will create many economic opportunities. In the near future it will be considered one of the most promising technologies with enormous potential for expansion.

Internet Service (IoS): Nowadays, we live in the so-called service society. There is strong evidence that, as in the case of the IoT concept, Internet service (IoS) is emerging, based on the idea that services are readily available through web technologies, enabling enterprises and private users, create and offer new types of services. It can be assumed that the Internet-based marketplace service locations will play a key role in the industries of the future. While from a pure technological perspective, concepts such as service-oriented architecture (SOA), software as a service (SaaS) or business process outsourcing (BPO) are closely related to IoS.

Smart factory: Up until now, CPS, IoT and IoS have been introduced as core components of Industry 4.0. It should be noted that these concepts are closely interrelated, since the CPS communicates through the IoT and IoS, thus allowing to spread the smart factory concept, which is based on the idea of a decentralized production system, in which human beings, the machines and the resources communicate with each other naturally. The closer connection and communication between products, machinery, transport systems and man is expected to change the production logic that already exists. Intelligent factories can therefore be considered another important feature of Industry 4.0, products become increasingly autonomous and independent through production processes, easily identifiable and locatable at any time, pursuing the idea of an efficient cost, but highly flexible and individualized mass production. The smart factory concept will make the increasing complexity of manufacturing processes manageable for people working in organizations, thus ensuring that production can be both attractive and sustainable in order to generate an urban and profitable environment. Therefore, the potential that these new smart factory processes offer is huge. In addition to these key components, there is a growing array of other technologies in the wider Industry 4.0, such as watches, glasses or gloves, augmented reality applications, stand-alone vehicles, drones, blockchain, or even big data. Industry 4.0 implies profound changes in the way companies work and organize itself. (Hoffmann & Rüş, 2017).

For instance, and according to Ratten et al. (2019), increasingly both business and government are focusing at low-income consumers and the role they play in the innovation process. This has meant greater emphasis has been given to understand the role of these consumers who are called 'subsistence consumers' because they live at the bottom of the pyramid and exist on low income and wages. Currently, there are many theories about the general repercussions of Industry 4.0, in this context, some critics have recently pointed out that automation and implementation of the smart factory concept can cause severe job destruction. Much is speculated as to the dangers of digital transformation and automation that Industry 4.0 will bring. Some studies advocate that this clever way of working will destroy a significant number of jobs. However, there are only a few stipulated examples of impacts on SCM. For this reason, with the primary objective of assessing opportunities, and possibly threats, as a result of the introduction of Industry 4.0 in each SCM function (Hofmann & Rüş, 2017).

Additive Fabrication: The additive manufacturing commonly known as 3D Printing is being singled out as one of the most promising production technologies at global level. 3D printing creates products by adding materials layer by layer over production processes with industrial machinery (Cotteleer, Holdowsky & Matho, 2014). In this way it is possible to provide solutions in the manufacture of small lots of highly customized products, even in environments of mass production. One of the great advantages of this technology is its insensitivity to quantity and complexity, which improves production exponentially in terms of time, costs and especially in terms of design, as this is the great premise of the future.

Another advantage is that it can be produced locally without the need to seek competitive countries in production costs, thus making productions closer to the target markets more profitable. This technology is promising by shortening the product development cycle to market launch and by reducing waste, which results in more efficient processes (Cotteleer, Holdowsky & Matho, 2014).

Augmented Reality: Bahrin, Othman, Azli & Talib (2016), cited by Santos & Lima (2018), explain that systems based on augmented reality can carry out a variety of services, such as selecting parts in a warehouse or sending repair instructions through mobile devices. These systems are currently in their infancy, but in the future, companies will make much broader use of augmented reality to provide workers with real-time information to improve decision making and work procedures. For example, workers may receive repair instructions on how to replace a particular part as they are looking at the actual system needing repair. This information may be displayed directly in workers' field of sight using devices such as augmented reality. (Rübmann, Lorenz, Gerbert, Waldner, Justus, Engel & Harnish, 2015).

Radio Frequency Identification (RFID): According to Ting, Tsang & Tse (2013), RFID is an important application of RFID is its use as a tool to enhance the visibility of objects in a supply chain. This allows the organization to achieve better material management so as to improve a supply chain's efficiency and effectiveness. It is also a reality that this kind of technology can produce higher quality and more information. Information is collected automatically without human intervention. Thus, the gathered information is more precise and free of human errors that often exist in data collected manually. Since data entry is no longer needed and labour is saved, the automation could result in the reduced cost of data collection, improved data quality and providing for the easier manipulation of information. The other expected benefits of RFID technology are the reduced risk of counterfeiting and theft prevention. These benefits can be realized because of the technology's ability to authenticate and track products. This can lead to increased customer satisfaction and loyalty, contributing to revenue growth and increased profits, as the products are more reliable and customers will receive better service.

Cybersecurity

We can characterize cyber security as being the vulnerabilities that computer systems present, and in Industry 4.0 there is a strong correlation between several systems, this fact reveals the impossibility of data protection, either internal to the various processes that the company holds either external. (Lezzi, Lazoi & Corallo, 2018). Rübmann et al. (2015), write that many companies still rely on management and production systems that are unconnected or closed. With the increased connectivity and use of standard communication protocols that come with Industry 4.0, the need to protect critical industrial systems and manufacturing lines from cybersecurity threats increases dramatically. As a result, secure reliable communications as well as sophisticated identity and access management of machines and users are essential.

The Problem of Cybersecurity

We assist the growing concern due to the internet has become so widely used. It isn't possible to talk about Industry 4.0 without talking about cyberspace, concepts that are relatively recent, but already well studied. An increasing number of companies are moving closer to the Industry 4.0 paradigm by connecting factories to the Internet in order to improve their efficiency and effectiveness. In this industrial context connected to the Internet, cyber security problems represent one of the most relevant challenges to be addressed. (Lezzi, Lazoi & Corallo, 2018).

Among the new threats are unauthorized remote access, data manipulation, loss of intellectual property, loss of revenue and in extreme cases espionage. To compound these threats is the fact that all threats need to be detected in a timely manner, which is a real challenge. (Industry 4.0 and Portugal, Siemens 2017). Special emphasis is given to digitisation of industry. The landmark initiative in this respect is the communication on Digitising European Industry. The Commission establishes that “Digitisation of the industrial fabric brings also new regulatory challenges. This includes issues relating to data generated by the multitude of new smart products, liability of more autonomous systems and safety with the increasing need for interaction between humans and smart devices. It requires striking the right balance between legitimate business interests and the fundamental rights ensuring protection of personal data and privacy, as set out in the General Data Protection Regulation. The further development of the IoT and big data pose also important trust and security challenges for any company and for public acceptance. (European Parliament 2017).

3 Research Methodologies

In terms of methodology, the search for information in this area is an endless process, since there is always something to discover. It is therefore important to delimit the scope of research by sticking to the substance and disseminating the results to ensure the progress of science, thus contributing to the creation of new knowledge. However, the research doesn't dispense a method that should prove effectiveness in the object of study. The method will be exploratory and bibliographical research, with a quantitative approach (enquires) to present a review of the main points already discussed in other exploratory studies already carried out in other countries on this issue. The question for all industries and companies without exception, is no longer: will there be a break in my company? But the question is: when will this breakdown occur, how long will the transition take and how will it affect my organization? A number of issues will be addressed, including: to understand the current importance of the supply chain in the Portuguese market; to understand if organizations are prepared to deal with the disruption that Industry 4.0 proposes; to analyse the implications and improvements that process automation will bring; to conjecture opportunities and threats that industry 4.0 will bring to the market. Considering the Portugal context, it is intended to understand how the supply chain, namely the purchasing sectors, are dealing with digital transformation. It is also intended to understand what kind of changes are implied with the application of industry 4.0 in Portugal, and whether we will be re-industrialized. For instance, and according to Casais and Sousa (2019), industries and markets are competitive, and it is equally important to understand the role of corporate social responsibility in certain industries (e.g. tourism industry). In an interdisciplinary perspective, the present study intends to present contributions for the management and for the sustainable operation of the value chain in the current markets. Specifically, we intend to study the reality in Portugal. At the end, the main conclusions of the study will be presented (quantitative nature). In the final section, the limitations of the study will be presented and guidelines will be discussed for future research.

4. Conclusions

Within the purchasing function, Industry 4.0 brings us a series of opportunities and threats. The implementation of certain technologies, such as virtual and augmented realities, 3D printing and simulation, are seen as opportunities. On the other hand, analysis of big data, cloud technology, cybersecurity, IoT, miniaturization of electronics, radio frequency identification (RFID), robotics, drones and nanotechnology, machine2machine (M2M) and business intelligence (BI), can be opportunities or threats for organizations. The fact that some technologies may result in opportunities and threats is because all the different areas are interconnected, with no clear boundaries between them, depending on where it was analyzed, can have a positive or negative connotation.

Some clear benefits can be identified from the implementation of the industry 4.0. The most relevant benefits are greater flexibility, quality standards, efficiency and productivity. This will allow for mass customization, allowing companies to meet customer demands, creating value through the constant introduction of new products and services in the market. In addition, collaboration between machines and human beings could impact socially the life of the worker of the future, especially with regard to the optimization of decision-making.

Although the impacts of Industry 4.0 in Supply Chain have been discussed in this paper, due to their theoretical nature, there remain some questions to be answered that, consequently, limit the generalization of this work, not only in its implementation, but also in its management. Therefore, we asked for empirical research in this area. It has useful to understand how Portuguese industry is preparing their organizations, in a holistic way to the future market changes. It can be explore forward in Portugal the concepts of Purchase 4.0 and Procurement 4.0. This document was our first attempt to help companies better understand the implications of Industry 4.0 and its relevant technologies for the achievement of the Digital Supply Chain or Supply Chain 4.0. Our work continues with some empirical work and evaluation of how companies should digitally integrate their supply chain.

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PARALLEL SESSION 4

TOWARD A DYNAMIC MODEL OF INTERNATIONAL PERFORMANCE OF FAMILY SMES: DETERMINANTS AND MEASURES

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Extended Abstract

Abstract

What determines performance of SMEs, as a major group is an issue attracting on-going interest of researchers and practitioners. When operating globally, SMEs face both challenges and opportunities to improve their performance. The objective of this study is to examine determinants and measures of performance of SMEs and their interplay with internationalization by distinguishing between type of ownership – family and non-family. It addresses the complexity and duality of the internationalization-performance relation. The proposed basic dynamic model of performance determinants and measures achieves three objectives. First, it makes a conceptual distinction between international and general performance. Second, it conditionally divides between hard and soft determinants and measures. Third, it reveals a bi-directional link international and general performance. The paper adds to extant body of knowledge by modeling basic determinants and measures of performance. Thus, the model becomes an integral part of the study, enhancing its visualization, theoretical scope and conceptual focus.

Keywords: performance; international entrepreneurship; internationalization; family SMEs; hard and soft determinants and measures; dynamic model.

1 Introduction

In the digital economy, firms are increasingly challenged to outperform competitors and improve business models while dealing with increasing demands of international markets. Internationalization is seen as an entrepreneurial activity especially for SMEs, some of which achieve fast growth in international markets (Lu & Beamish, 2001). Nowadays, performance of SMEs is strongly linked to internationalization, especially in post-transition, emerging economies. First, because international activities can contribute for a superior performance in a limited domestic market. And second, enterprises performing better domestically have a better starting point to find growth opportunities and succeed internationally. The increasing role of SMEs in the international market leads to a substantial body of research on SMEs internationalization, especially among entrepreneurship researchers (Lu & Beamish, 2002).

The paper addresses the need to study the antecedents of SME internationalization from an integrative viewpoint (i.e., different theoretical perspectives and levels of analysis) and the relationships between those antecedents as an underexplored topic (Martineau & Pastoriza, 2016). By doing so, it introduces a dynamic model of determinants and measures of family SMEs' international and general performance. The research gap addressed is concerned with the impact of different sources of family firm heterogeneity on internationalization (De Massis, Frattini, Majocchi, & Piscitello, 2017). By differentiating between hard and soft determinants and measures of performance, the proposed model addresses the need to study sources of heterogeneity of internationalization of family firms (and its determinants and outcomes).

The paper attempts to reveal what shapes performance of family SMEs by modeling determinants and measures of performance and by distinguishing between hard and soft determinants and measures. What hard and soft determinants shape the performance of smaller firms? What determinants and measures are instrumental for predicting and assessing overall and international performance of family SMEs? These are the questions addressed in this study to better understand the performance traits of small firms.

2 Literature Review

There is an agreement that traditional step-by-step internationalization does not correspond to the complexity of SMEs – they do not follow a common internationalization path or pattern (Schulz, Borghoff, & Kraus, 2009). The most evident exception are born-globals that oppose traditional models as they do not internationalize as 'rings in the water' (Madsen & Servais, 1997). The theory of born globals stipulates that they can be viewed as incidental, not incremental internationalists and this is due to their business model (Hennart, 2014). Phenomenon of born globals shows that enterprises of any size, resource base, age, and experience can be active in doing business internationally and gain benefits from it (Knight & Liesch, 2015). By not following the traditional internationalization path, some SMEs are able to quickly become exceptional global performers.

Firm's performance is an 'aggregate phenomenon' with a multifaceted nature and wide variety of models and variables to measure it (Hansen & Wernerfelt, 1989). It is an important concept in strategic management research. Still, attempts to understand its dimensionality and measurement are on the most part away from consensus, thus limiting advancements in understanding the concept (Santos & Brito, 2012). Performance of family firms is a major topic in family business literature. It is beyond doubt that family businesses are different from other type of firms. Yet, mixed and conflicting findings make it discussible whether family ownership and management are good or bad for performance or do not have a significant influence on performance measured by financial outcomes (Gomez-Mejia, Cruz, Berrone, & De Castro, 2011). From agency theory viewpoint, it is argued that family (and founder) ownership contribute positively to performance while family management erode performance (Block, Jaskiewicz, & Miller, 2011).

What determines superior performance is a fundamental question. Firm-level performance, both domestic and international, depends primarily on the characteristics of the firm-specific advantages and related higher-order capabilities to adapt to environmental changes, rather than on the multinationality (Verbeke & Brugman, 2009). In an open economy, enterprises with strong dynamic capabilities (distinct skills, processes, structures) enabling creation, deployment, and protection of intangible assets are strongly entrepreneurial, superior performers (Teece, 2007). Resources and capabilities can be either a source of advantage or a constraint to the performance of family-influenced firms (Habbershon, Williams, & MacMillan, 2003). While superior performance in entrepreneurship is traditionally associated with innovation, growth, and risk-taking, smaller family firms tend to be less entrepreneurial, especially in some contexts. This type is naturally prone to be more conservative toward risk-taking, rather oriented to conserving tradition and long-term survival, than to seizing opportunities, introducing innovation and fast growth. Family firms take risks to a lesser extent than non-family firms (Naldi, Nordqvist, Sjöberg, & Wiklund, 2007).

That attitude is expected to put smaller family firms in a disadvantaged position regarding their performance. Contrary to that, a meta-analysis shows that despite preference of more conservative strategies, risk aversion does not hurt performance of family firms (Carney, Van Essen, Gedajlovic, & Heugens, 2013). This evidence does not automatically mean that family firms are superior performers internationally. Hence, a differentiation should be made between international and general performance.

3 Research Methodologies

A literature review was conducted as a supplementary tool to better shape and differentiate the dynamic model of performance of SMEs. Selected articles are published by various journals and researchers, thus enriching the review with diversity of theories and perspectives. The procedure followed summarizes the main concepts and determinants from literature on firm's performance, with focus on SMEs and family firms. Unlike a systematic review - see for example (Ivanova, Dentchev, & Todorov, 2015) with a broader time span and wider selection of items (articles) this literature review is an abridged version. This means it follows a semi-structured approach to become a more compatible and organic fit with the proposed model. After defining the research questions (in the introduction), additional steps followed in the abridged version are:

- Pre-review - Searching for studies: choosing keywords; selecting studies;
- Review - Collecting and analyzing data: presenting 'Summary of findings'; interpreting results and drawing conclusions.

4 Results

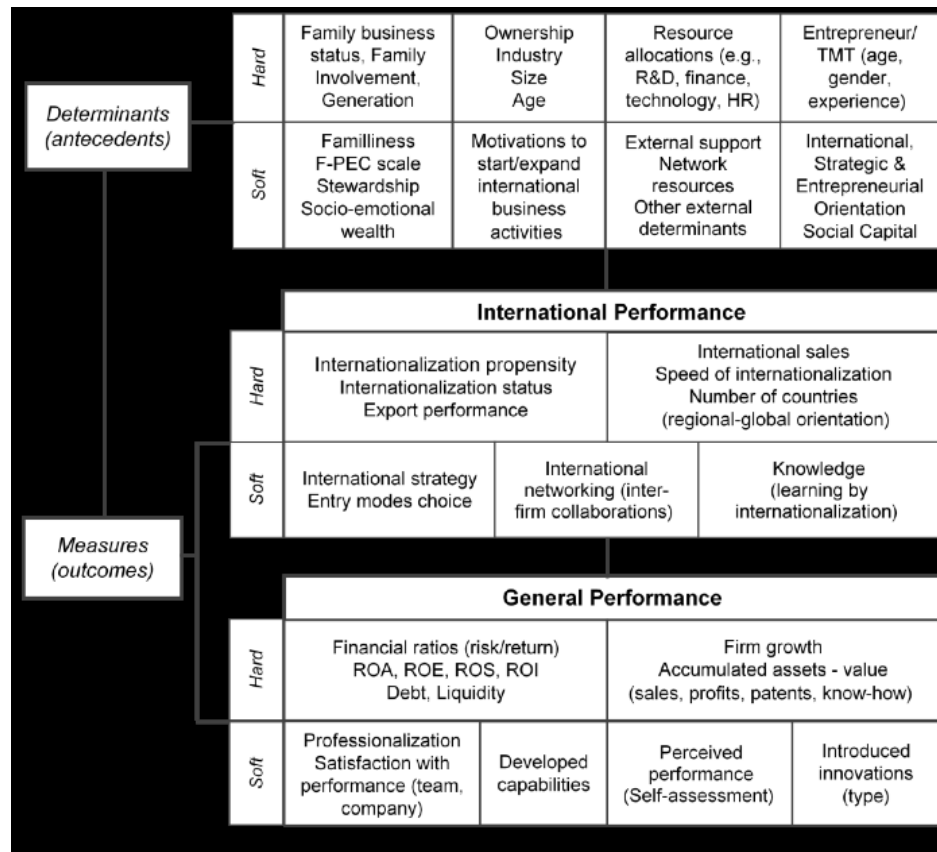
Hard and Soft Determinants and Measures of Internationalization and Performance – a Distinction

Following the logic behind the integrated model of international entrepreneurship (Zahra & George, 2002) and a conceptual scheme for determinants, patterns, and outcomes of internationalization and performance of the small company (Manolova & Manev, 2004), a distinction is made between hard and soft determinants and measures of internationalization and performance. The latter are incorporated in a simplified, basic model of performance of family SMEs: both international and general (Figure 1).

The model is labeled as 'basic dynamic' for two main reasons. First, some variables can be studied as both determinants and measures, including in relation to each other, one being antecedent, and the other – outcome (e.g., greater internationalization speed may lead to more international sales and vice versa); or can be mediators or moderators in the internationalization-performance relationship. The boundaries between international and general performance are also vague. Second, the division between 'hard' and 'soft' determinants and measures of performance is conditional, based on the approach of measuring a variable – the first being objective and quantifiable and the latter – subjective and descriptive. A firm can be determined as a family enterprise based on objective, 'hard' criteria (share of family ownership and number of family members involved in management) or more subjective criteria (self-identification).

Figure 1. Hard and Soft Determinants and Measures of Internationalization and Performance of Family SMEs – A Basic Dynamic Model and Bi-Directional Links

Figure 1. Hard and Soft Determinants and Measures of Internationalization and Performance of Family SMEs – A Basic Dynamic Model and Bi-Directional Links



Abbreviations: F-PEC scale - familiness-power, experience, and culture scale; R&D - research and development; HR - human resources; TMT - top management team; ROA - return on assets; ROE - return on equity; ROS - return on sales; ROI - return on investment

Hard determinants are general organizational and individual variables with an exact quantifiable value: firm's age, size measured by employees, assets or sales - domestic and international (also operationalized as an outcome variable); individual's age; years of experience; value of R&D expenditures, external support. Other determinants are categorized according to the purpose of study - ownership: family, non-family; private, public; domestic, international; sector: high-tech, low-tech, etc. Soft determinants are subjective perceptions, opinions of an individual or a group (entrepreneur, key employees, management team) about an indicator of performance often measured by scales. SMEs differ from larger firms in their international activities - internationalization probability and degree (in terms of business functions involved) are lower for smaller firms except for a segment of small knowledge-intensive firms (Hollenstein, 2005). Industry and technological advantages affect performance and internationalization. In high-tech industries (high-tech manufacturing, ICT and other high-tech services) family entrepreneurial ventures exhibit higher internationalization propensity (Piva, Rossi-Lamastra, & De Massis, 2013). R&D investments are major determinants of performance of high-tech SMEs. They are also found to be important for non-high-tech firms - internationalization provokes non-high-tech SMEs to exploit their R&D investment more effectively to enhance performance (Booltink & Saka-Helmhout, 2018).

4. Conclusions

Research Implications. The basic dynamic model of hard and soft determinants and measures can be used by researchers of both international and general performance of family SMEs. A fundamental question is whether family firms are less targeted to financial performance and more oriented to intangible objectives, e.g., long-term survival (Gomez-Mejia et al., 2011). By further studies of hard and soft determinants of performance including underlying motives, researchers might better understand the driving forces of superior performers and type of determinants that model the behavior of small family firms. The conditional division between determinants and measures allows greater flexibility in choosing independent and outcome variables – a variable can be either a determinant or a measure depending on the research objectives.

Practical Implications. A study of determinants of performance is of potential interest to practitioners, consultants, and policymakers to better understand what typical traits are associated with a competitive performance. The distinction between hard and soft determinants and measures can be of use to practitioners. Some indicators of performance traditionally used in the economic literature are less applicable for smaller firms. For example, market share – due to multiple market players and great dynamics of competition: failures, exits and new entrants (with exception of sectors with few players). To measure competitive performance, alternatively the hard indicator – market share could be replaced with a soft one – e.g., competitiveness of the main product of a firm – self-estimation and/or customers' perception.

Originality and value. The paper contributes to the extant body of knowledge by incorporating in a single model hard and soft determinants and measures of international and general performance.

Research Limitations. The proposed basic dynamic model and distinction between hard and soft determinants and measures of performance as a challenging endeavor is exemplary and far from being comprehensive. This is due to the overall complexity of the internationalization process, internationalization-performance relationship and its determinants.

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PARALLEL SESSION 5

CONTRIBUTIONS TOWARDS THE ADOPTION OF CIRCULAR ECONOMY IN THE HOSPITALITY INDUSTRY: CONSUMER AWARENESS AND PREFERENCES

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Extended Abstract

Abstract

The characterization of consumer awareness and behaviour towards sustainability issues is an important contribution to the widespread adoption of Circular Economy practices. Focusing on the Hospitality Industry, an exploratory survey was conducted in Oporto city to domestic and foreign tourists using a questionnaire, which produced 203 valid responses. Preliminary findings indicate that consumers are willing to accept green and circular practices in their hotels of choice. Moreover, participants showed to be concerned about future generations and referred valuing dedicated sustainability practices. To conclude, based on generation and age, the main Circular Economy practices that most influence the consumers' decisions and choices were identified and ranked.

Keywords: Sustainability; Circular Economy; Consumers' Behaviour; Green Practices; Hotel Industry; Tourism.

1 Introduction

Current society is continuously being pushed to increase consumption and to raise product and service demand. However, in a finite world, resources are becoming scarce and environmental problems are growing, thus creating higher resource dependency and climate changes. As a result, the traditional model of linear economy, based on extraction-transformation-utilization-disposal (Ellen MacArthur Foundation, 2012) is no longer efficient or sustainable for the standard consumption, since our planet takes almost one and a half years to regenerate what is used in one year (Antikainen et al., 2015). Considering the consumers' concerns about environmental changes and degradation (Shen & Zheng, 2009), current hotel industry should be receptive to future changes of consumer behaviour, not only by sustainability aware customers, but also by management decision. There is a need to move towards a sustainable and greener tourism (Chengcai et al., 2017) and, as some authors defend, such an innovative approach and model, "which incorporates the principles of the circular economy - reuse, reduce, recycle" should be applied to all industries, including tourism and hospitality industry (Julião et al., 2019; Nedyalkova, 2018).

On what refers the hospitality industry, as one of current largest water and energy consumers (and even a greater producer of waste), there is an evident need for new alternatives to develop waste management, water savings and energy conservation (Verma & Chandra, 2018b). As a result, even though the appearance of Circular Economy (CE) in the hospitality industry can be seen as a solution to solve resource scarcity, the lack of studies approaching the connection of these two subjects is visible.

The purpose of this paper is to explore consumers' awareness towards CE and sustainability-oriented practices in hospitality industry, in order to discover their motivations and connections between their intention and attitudes. The goal is to identify findings that motivate hotel managers to move from linear to circular tourism. To support this study an exploratory survey was conducted in Oporto city to domestic and foreigner tourists using a questionnaire, which produced 203 valid responses.

2 Literature Review

2.1 Circular Economy as a model towards Sustainable Development

In order to achieve sustainable development, leaders are aware of the efforts that need to be done to such end. Changing consumption and production patterns in order to get natural resources' efficiency, while reaching for economic and social development, requires a radical, transformational and systematic change of the companies' business models (Preston, 2012).

As a result, CE appeared as a sustainable development strategy that successfully contributes to achieve all the three dimension of sustainability, economy, environment and society (Murray et al., 2015), tackling the crucial challenges of environmental destruction and resources scarcity (Korhonen, et al., 2018), reusing and recycling materials, maximizing all energy, reducing waste and regenerating value from it while being sustainable (Heshmati, 2018).

Currently, CE is closely related to one of the UN's Sustainable Development goals, which aims to reach a resource's use efficiency and pollution reduction, looking for the whole life of the goods (Brightley & International Institute of Gastronomy, Culture, 2017; Wit et al., 2018). On what regards to the CE's environmental objective, there is a focus on reducing virgin material, energy inputs, waste and emissions of the production-consumption system by applying long-lasting and biological materials with access to renewable energies.

Economically, the CE's objective is to create higher value from the production-consumption system and reduce material and energy costs while being innovative, creating new alternatives and opportunities for a new market and new businesses (Korhonen et al., 2018). Therefore, environment and economics are closely related, and CE came to improve the relationship between both, otherwise, if the environment is forgotten we create again a linear economy model (Brightley & IGCAT, 2017; da Cruz, 2017; Heshmati, 2018). Accordingly, CE is inter-connected with the 3R principles, reduce, reuse and recycle (da Cruz, 2017; Ghisellini, Cialani, & Ulgiati, 2016; Heshmati, 2018), highlighting the connection between environment and economics, where environment is the major supplier of the economy by providing the natural resources and energy as the main source of productivity and utility (da Cruz, 2017).

As referred before, CE practices have a higher potential to approach environmental and growth challenges related to overconsumption, overproduction and waste increase, globally and locally (Schroeder, et al., 2019). As a common problem for all businesses, hotels are also fighting to reduce the negative impacts imposed by the linear model (Bohdanowicz, 2003), being pressured by regulations and legislation to implement sustainable strategies, mainly towards the environment (Berezan, Millar, & Raab, 2010). As a result, this research embeds, therefore, the adaptation of CE practices on hospitality industry and their acceptance by travellers and consumers.

2.2 Green Hotels and Practices

Green hotels, eco-friendly hotels, ecologically friendly hotels are also known by various authors as, environmentally friendly lodging properties that perform, green methodologies, responsible operations and ecological programs. They aim to conserve the nature, promote conservation, recycling and energy efficiency, decreasing operational costs, thinking in future generations' protection while, providing consumers healthy, hygienic, sustainable and clean products (Millar et al., 2008; Verma & Chandra, 2018b, Verma & Chandra, 2018a, Verma & Chandra, 2018c). It is known now as an important concept that develop the hospitality industry to move toward a more sustainable development and a crucial reason for travellers' hotel choice (Chengcai et al., 2017; Verma & Chandra, 2018a).

As an approach to sustainability, it is possible to interrelate green tourism with CE since both practices are eager to put into practice alternatives for waste reduction, recycling, energy and resources saving whilst reducing operation costs. Moreover, both concepts incorporate and involve all the three dimensions of sustainability (Millar et al., 2008; Schroeder et al., 2019) and require a balance between innovation, technology and new business models (Brightley & IGCAT, 2017).

As referred before, "green or eco-friendly practices in the accommodation sector are growing around the world and conscious customers are demanding these services" (Londoño & Hernandez-Maskivker, 2016). As a growing trend, the purpose of this research is to analyse the consumers' acceptance of green practices that can be applicable to the hotel industry.

Green practices are procedures that can be adaptable by the management teams on hotels, in order to decrease the negative impacts on earth (Yusof, Jusoff, Ibrahim, & Awang, 2017), fighting mainly, energy consumption, water excess and waste management (Kang, Stein, Heo, & Lee, 2012).

Using non-polluting soaps (Han, et al., 2011) or refillable shampoo containers (Verma & Chandra, 2018b), installing energy efficient lighting to conserve energy, switching incandescent lights for LED (Ogbeide, 2013; Ruben & Tourism, 2001; van Rheede, 2015), are examples of green practices that have the same focus as CE, and can create environmental impact whilst increasing travellers' attention to conserve and protect (Kang et al., 2012).

2.3 Hospitality Consumers

As main enablers, customers play an important role when deciding to adopt CE practices. Therefore, it is important to study their acceptance and the advantages that they can bring (Antikainen et al., 2015). In consumers optic, when hotels are applying green practices or CE's methodologies, market demand grows side by side with customer satisfaction (Han et al., 2011).

Current consumers are looking for new practices and new models, getting more interested in green and circular practices. For this reason, applying CE will create added value, comparing to conventional alternatives, influencing travellers' decision-making (Antikainen et al., 2015).

As referred before, hotels guests split their conscious between cognitive and emotional aspects (Bradburn et al., 2014; Conraud-Koellner & Rivas-Tovar, 2009) for this reason, some authors highlighted that hotel guests feel emotional advantages when applying for a green hotel. These emotional benefits can be expressed with a feeling of self-expression, awareness about the next generations or even by an altruistic behaviour where the environment is the main concern (Han et al., 2011).

When applying CE, consumers have access to improved products and services, where durability and longevity increase (European Commission, 2015) and as a consequence, improving the relationship between consumers and businesses, moving to a service model based on convenience, durability and quality (Standard, 2017).

3 Research Methodologies

In the current exploratory study, a survey was developed to characterize consumer awareness and preferences towards sustainability issues on the Hospitality Industry. Previous to planning the final questionnaire, there was a need to clarify which subjects should be addressed and that would be better accepted by consumers. Following the literature review, dedicated reference social media was analysed and street interviews were conducted to help designing the final questionnaire.

On what concerns the sample definition, as current study is of a qualitative and exploratory nature, there is no need to predefine the sample and determine the number of answers (da Cruz, 2017; Gray, 2017). However, it was established a minimum of 200 answers, similar to other study related to circular economy (da Cruz, 2017) or to consumers' perceptions about green hotels (Millar et al., 2008).

The questionnaire was applied online through social networks as a way to address a larger group with different ages, backgrounds and beliefs. Throughout the process, a smaller sample of questionnaires were conducted face-to-face to compare the two different approaches. This allowed inferring about eventual biases in some of the questions and complement with qualitative data.

The final questionnaire was designed in two main parts: sociodemographic questions and consumer preferences and awareness questions. The sociodemographic questions were essential to get detailed data from participants (Gray, 2017), whilst the main questions were based on the literature review or adapted from similar studies. Most questions were based on a sustainability study conducted in Portugal in 2016 (Schmidt et al., 2016) as well as in a study based on consumers' preferences for green hotels (Millar et al., 2008) to allow for comparing consumer's perceptions in current research.

This exploratory survey was conducted in Oporto city to domestic and foreign tourists in 2018/2019.

4 Main Results and Discussion

Current hospitality industry operators are well aware of the need to value green practices in their business model, as the customers' environmental consciousness positively influences green consumer behaviour. To such end, it shows to be relevant understanding to what extent the consumers are actually willing to follow the hotel industry's path of ecological consumption.

Furthermore, it is important to understand which use of resources is made in a more responsible and sustainable way by the hospitality industry, thus allowing consumers to become eco-friendly tourists that "participate to undo the damage created by tourism activities to the environment" (Verma & Chandra, 2018a).

In current exploratory survey, conducted in Oporto city to domestic and foreign tourists using a questionnaire, which produced 203 valid responses, it was possible to gain further understanding of current consumers' awareness towards CE impacts in the Hospitality Industry.

Based on those results, it was realized that almost all participants referred being familiar not only with the concept of «environmental sustainability» (96%), but also with «eco-friendly products» (93%). Other sustainability-related concepts were mentioned by the respondents as being familiar to them, e.g. «eco-efficiency» (67%) or «eco-design» (53%). A group of remaining sustainability-related concepts showed to be less known by the respondents, with the «Circular Economy» concept mentioned to be the less known to the interviewees.

When asked about some CE initiatives in the hospitality sector, the respondents highlighted their preference for «national products», directly followed by «produce less with less negative impacts on environment» and «give priority to the local economy and products».

In this group of interviewees, when analysing in more detail to the correlation of each statement with the respondents' age, one can conclude that the youngest generation (18-24 years old) value more giving priority to the local economy and products. On the other hand, the 25-35 years' generation showed to be the one that was most worried about the negative impacts on the environment. It was also observed that the respondents' last two generations (44-60 years and 60+) did value as most the use of national products as sustainability practices in a CE model.

To conclude, it was possible to recognize in current survey that society, independently of the generation, is able to recycle and reuse, probably due to the simplicity of the process and the solutions that are provided and made available by sustainability aware hospitality industry. These aspects were derived from the questionnaire based on the adoption of some of the activities that are present in society's daily life into the green hotel practices.

5 Summary and Conclusions

Consumers' perceptions of Circular Economy in the hotel industry were identified and analysed in a survey of exploratory nature.

With the aim to identify consumers' sustainability-related preferences that can motivate hotel managers to move from a linear to a CE model in the hospitality industry, a dedicated research was conducted in the Portuguese city of Oporto. A sample of 203 valid responses of domestic and foreign touristic consumers was collected using a specially designed questionnaire.

Results of this exploratory study offered insights into the determinants of consumer behaviour regarding CE practices in the hospitality industry based on the respondent's generation and age.

This survey allowed concluding that hospitality consumers are aware and eager to adopt sustainability solutions in order to promote related CE practices.

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PARALLEL SESSION 5

SPATIAL AND TEMPORAL CONCENTRATION OF TOURISM DEMAND IN NORTHERN PORTUGAL: REGIONAL POLICY RECOMMENDATIONS TO PROMOTE TOURISM COMPETITION AND PORTFOLIO DIVERSITY

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Extended Abstract

Abstract

The northern region of Portugal, in the last years, has experienced a growing number of visitors from different countries, which may indicate the emergence of an overtourism phenomenon in some particular municipalities or specific spaces. This phenomenon may cause significant destruction of the living conditions of residents, landscapes, seascapes, air and water quality, causing economic inequalities and social exclusion. The concentration of tourism activity in different municipality regions can be measured with a well know concentration measured, the Herfindahl-Hirschman Index. Using as variables the number and nationality of visitors and their expenditures it is possible to follow the concentration of tourism visitors and expenditure, all over the 8 NUTIII regions located in the Northern of Portugal, and describe the routes of distribution of the tourism indicators from urban to rural areas following a more nature-oriented tourism. The results serve as a dipping compass for more oriented and well-targeted tourism policies.

Keywords: Overtourism, Northern Portugal, Spatial measurement, Herfindahl-Hirschman Index, Public policies, Outdoor tourism.

1 Introduction

Attention to the importance of tourism as a particularly efficient way of promoting regional development has increased significantly in recent years, in part due to tourism's ability to generate income and employment as well as synergies within other economic sectors (Ozturk, 2016). Portugal has a long tradition in tourism. However, the development of tourism between regions is unbalanced as a result of the country's highly insular and mountainous geomorphology and the unequal distribution of natural, socio-cultural and environmental resources. Nevertheless, factors such as a rich cultural heritage, a long coastline and a good natural environment encompass significant opportunities for the development and promotion of tourism in the North of Portugal (Andraz, Norte, & Gonçalves, 2015).

While confining green spaces with densely populated urban agglomerations are preferred locations for outdoor recreational activities by many residents, ecotourism participants are attracted to hilly regions endowed with wildlife, attractive landscapes and that offer opportunity for outdoor activities such as hiking, mountain biking, climbing or skiing (Pomfret & Bramwell, 2016). In this framework, the North of Portugal is a privileged space since it is a hilly region with a heterogeneous panorama. In fact, this region has 4 mountains: Serra do Gerês, Peneda, Marão and Soajo, as well as six prominent rivers (Minho, Lima, Neiva, Cávado, Ave and Douro), waterfalls and vineyards. Some of these elevations form natural parks, such as Peneda-Gerês, Montesinho and Alvão. In addition, the region incorporates four World Heritage Sites: Porto and Historic Center of Guimarães; Alto Douro Vinhateiro; and the Prehistoric Region and the Rock Art site in the Côa Valley. In this context, the Douro region was considered as a priority tourist attraction within the agenda of the National Strategic Tourism Plan and was also considered by the Regional Tourism Agenda as a priority area for the development of regional tourism.

In 2017, the Tourist Saturation Index for Portugal, an indicator of the social impact which allows to evaluate the relative importance of tourism and its capacity to support marginal increases on the tourism demand (Santos & Fernandes, 2011), and specifically for the North region, is quite high - it reached values of 2.33 and 1.37, respectively, meaning that the number of visitors has surpassed the number of residents. Regarding the NUTS III regions of the Northern Portugal, the results showed that 6, of the 8 NUTS III regions, presented concerning values (i.e., higher than 1). In particular, Alto Minho (1.55), Cávado (1.18), Área Metropolitana do Porto (1.81), Alto Tâmega (1.49), Douro (1.31) and Terras de Trás-os-Montes (1.22). The Ave and Tâmega e Sousa regions reached values of 0.65 and 0.39, respectively. For the period of 2014-2017, all regions presented a positive average growth rate of the Tourist Saturation Index, above the 10% average annual growth rate. Wherein the regions that showed high growth rates were Tâmega e Sousa (21.1%), Alto Minho (20.8%) and Cávado (14.4%), which values could be an indicator of the overtourism phenomenon.

The regional statistics of Turismo de Portugal for 2017 (Regional Statistical Yearbook) show, at the national level, a decrease of the average stay to 3.3 nights for the foreign market (-0.1 nights compared to 2016) and the maintenance of 2 nights for the stay of residents. The Portuguese region with the most number of overnight stays is Algarve, with 19 million, having grown 5.3% over the previous year. In Portugal, countries like Germany, Spain, France and the Netherlands, generated 25.3 million overnight stays, representing 61% of the total number of foreigners.

Total tourism revenues amounted to € 15.2 billion in 2017, an increase of 19.5% over the previous year. In the Northern region, and according to the same regional statistical yearbook, the average stay remained the same for both foreigners (2.1 nights) and residents (1.5 nights). It is the region with more stays of residents (3.2 million), which represented an increase of 3.6% between 2016 and 2017. The TOP 5 nationalities that visit the Northern region (Spain, France, Brazil, Germany and the United Kingdom) represents 60% of foreigners in the region and a total of more than 2.5 million overnight stays. Also noteworthy is the evolution of the number of tourists from Brazil (+ 31.7%) and the US (+ 31.1%). According to Turismo de Portugal - Travel BI, tourism revenues in the North Region amounted to € 430.3 million in 2017, representing an increase of 18.9% over 2016; and the room occupancy reached 64% in 2017, increasing by 3.3% (Turismo de Portugal, 2019).

Tourism demand, as it is known, is affected by the demographic trend. In addition, there is a tendency for more holiday periods and shorter ones due to the greater flexibility of weekly working hours and changes in the transport sector, for example, low-cost air travel and the evolution of the Internet reservation that takes less time in the preparation of holidays and fewer costs.

2 Literature Review

Regarding the abovementioned, the current enormous amount of tourism inbound flows led to the occurrence of a new type of tourism, whose economic and socio-cultural importance gave it the status of mass tourism. The analysis of tourism reflects a phenomenon of masses, both in terms of the number of people who practice it (visitors), of the agents associated with it (both public and private sectors) and of the spaces where it grows and develops (tourism destinations) (Benur & Bramwell, 2015). While some countries around the world focus their efforts on tourism promotion campaigns and seek to attract visitors through all possible strategies, others suffer from the overcrowding of some of their spaces and the dissatisfaction of its residents. The overtourism, the phenomenon of mass tourism, is a new concept, which embraces the study of the negative consequences of the tourism mass flows (Koens, Postma, & Papp, 2018). Nevertheless, the phenomenon already exists as a consequence of tourism crowding and its effects on the local and regional communities. Less careful control of tourism development and the spread of overtourism may lead to the loss of identity and authenticity and generate a significant risk to the future attractiveness and competitiveness of a particular touristic destination.

Bearing in mind the observed values, it is necessary that the reception of tourists in the North of Portugal follows a model of development related to special forms and alternatives of tourism, namely through a diversified and high-quality portfolio of production of tourist goods and services. Cultural, heritage, religious, agricultural, and gastronomic characteristics can be harnessed for this purpose. In particular, in order to mitigate the phenomenon of overtourism and its possible negative impacts on the territory and its populations, the solution may comprise the promotion (either public as private) of tourism offers of touristic activities, namely the ones related to outdoor tourism, in other less slaughtered regions (Keniger, Gaston, Irvine, & Fuller, 2013; Milano, Novelli, & Cheer, 2019; Perkumienė & Pranskūnienė, 2019). However, the trend towards a more nature-oriented tourism is difficult to assess due to the lack of generally accepted definitions on the one hand and the behaviour of tourists, who in many cases choose a mixture of culture and recreation during the same vacation period (Boley & Green, 2016; Sandbrook, 2010).

3 Research Methodologies

The empirical evaluation of regional tourist inequalities is usually performed using well-known regional statistical measures, namely dispersion and concentration measures, such as the location quotient, the tourist density indices, the occupancy rates or the hotel density indices. Some of these measures are derived from descriptive statistics, while others have been specifically designed for regional and tourism analysis purposes. The Herfindahl-Hirschman Index (HHI), is probably the most used indicator to measure the level of concentration/specialization between companies. In addition, The HHI is also one of the most common indicators used to detect anti-competitive practices among companies. An increase in the value of the index is usually interpreted as an indicator of actions that can decrease the competition of the companies. Due to its enormous potential and versatility, its application has been extended to the tourism literature, to measure the level of concentration/competition between regions and over time (Cerqueti & Ausloos, 2015; Croes & Kubickova, 2013; Liu, Li, & Parkpian, 2018; Majewska, 2015). Considering the spacial level of subregions (municipalities or their communities, for example) within the North of Portugal, it is possible to use the index to calculate a major uniformity or a higher discrepancy among those subregions bearing in mind, for instance, the number of tourist arrivals, visitors by nationality, the expenditure made tourists or the practitioners of specific types of tourism activities.

The HHI is given by the formula $\sum_{i=1}^n s_i^2$, where n is the number of subregions considered within the North region and the s_i^2 is the square of the share of each subregion considering the indicator chosen to assess the touristic competition/concentration among subregions. Note, that the reason for squaring the regional share under analysis is to emphasize the weight of larger tourist destinations in the market. The index could range between 0, meaning a perfect uniformity among regions, and 1 meaning a perfect concentration which reflects high differences among regions. Lower levels of the HHI indicate a more diverse portfolio of tourism activities offered by the subregions. The higher the HHI the smaller the number of subregions with tourism concentration and the weaker the competition in concurring to the creation of businesses and jobs in the sector and, therefore, the level of income generated. The tourism attraction diversity of a northern subregion destination may be regarded as the inverse of HHI.

In this research work, the HHI addresses the spatial and temporal concentration regarding the market of origin of tourists in the North region of Portugal, considering the number and nationality of visitants, the nights spend and the expenditure made in accommodation in each subregion. In more detail, it will analyse the particular case of the number of outdoor activities/tourists in the subregions of the North of Portugal. For this last indicator, the HHI is used as a measure of the size of the particular tourism attraction type in a subregion in relation to the overall northern tourism industry. In this case, an increase in the index could be interpreted as a decrease in the attraction type diversity. The opposite happens if the index decreases. The current and official data of the National Statistics of Portugal (INE) will be considered for all 8 NUTIII regions (8 subregions) that belong to the North region of Portugal, over the period 2014-2017 (the period for each could be found the most updated statistics according to the last NUT revision, in Portugal).

4 Discussion and Results

The results show the number of visitors and their expenditure grew all over the regions in analysis in the last years. Moreover, the proportion of foreign guests in the tourism accommodation available on those regions also increased. A simple glance at the statistical data allows to observe that all the northern region of Portugal became more attractive. That is an undeniable fact. The present tourism public policies are achieving the attraction purpose. However, when analyzing the concentration of visitors (namely the foreign ones) and the receipts they generate on accommodation, after applying the HHI, it is possible to observe that the levels of concentration of visitors and their accommodation expenditure changed just slightly towards specific regions - the ones nearest the places with more visitors both in number as in accommodation receipts. More rural, desertified and elder areas continue to present low relative level of tourism activities when compared with more traditional touristic regions. Such results show the importance of promote more effective and targeted public policies, namely measures to attract nature-oriented tourism as the outdoor tourism.

5 Conclusions

The HHI allows to gain insights on the level of competition among regions over time and on their interactions, to recommend public policies for the sustainability of the tourism sector in the North of Portugal and to provide tools for the strategic management of private companies in this sector of activity. The North of Portugal offers a set of multiple and very distinct touristic solutions that are not yet well known and explored but which development may be a justifiable bet to diversify experiences and destinations – it is the case of the outdoor tourism that may create competition opportunities among regions and combat the overtourism concentrated in specific hotspot areas for tourists, such as coastal areas, gateway cities or higher hierarchy cities within the northern Portuguese region. The offer of outdoor tourism, regulated by suitable rules and supplied adequately by the specific public and private agents, is a solution not yet extensively study, analysed and scientifically researched.

In a context of tourism globalization, massification may be an inevitability for several hotspot tourism destinations. Nonetheless, if there is a proper policy of spatial planning, based on well-defined measures and indicators, like the one here proposed by the application of the HHI, there could be adequate management of it and the provision of effective mechanisms for environmental planning and management. Furthermore, due to the complexity of the tourist product (accommodation facilities, travel organizers, attractions and leisure activities), necessary to satisfy tourists' demands, not only produced by different private companies, but also public or semi-public institutions (roads, transportation, municipal services, museums & heritage services), a close public-private partnership is recommended to increase the competitiveness not only of individual companies but also of the destination as the conglomerate of all product components needed to welcome tourists.

Finally, effective policies for tourism in the North of Portugal may allow the generation of spillover effects which generate tourism sustainability avoiding or mitigating the negative impacts of overtourism on the territory and its communities, maintaining the interest in both national and international touristic flows and its long term economic profitability, social positive impact (which include the creation of jobs and the desertification of rural spaces) and environmental protection.

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PARALLEL SESSION 5

THE IMPORTANCE OF INNOVATION IN THE COMPETITIVENESS OF TOURISM BUSINESSES

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Extended Abstract

Abstract

The objective of this research involves the analysis of the factors of innovation and its influence on the competitiveness of both the destination and its business. Based on primary data collected by questionnaire from a sample of 119 companies operating in the tourism sector in Madeira Island (Portugal), we applied a quantitative methodology using econometric models and multiple linear regression. Regarding the results, these are based on a conceptual model are obtained through the analysis of competitiveness based on tourism and factors of. The study empirically tests the existing relationships between factors and barriers to innovation to leverage the competitiveness of destinations and their companies. The results have important theoretical and practical implications that contribute to innovation for competitiveness and contribute to filling a gap in this field of study.

Keywords: Autonomous Region of Madeira, Business, Competitiveness, Tourism, Innovation.

1 Introduction

Competitiveness has become one of the main concerns of regions and businesses all around the world (D'Ippolito, 2014). With tourism representing a cluster important to both the development and competitiveness of regions, there is particular relevance in analysing the potential of this sector (Chhetri, Chhetri, Arrowsmith, & Corcoran, 2017).

Hence, the importance also of exploring, identifying and analysing the critical factors and barriers to the success of business models susceptible to ensuring ever greater innovation and market competitiveness ((Long, Looijen, & Blok, 2018; Rajapathirana & Hui, 2017; Wang & Chang, 2005; Zhao et al., 2018; Long, Looijen, & Blok, 2018).

Innovation plays a crucial role in economic policies due especially to its contribution as a factor for competitive advantage. Competitiveness is not only a concern for societies, industries, companies and governments but also for researchers studying this field in general (Abreu Novais, Ruhanen, & Arcodia, 2018; Ferreira, Fernandes, & Ratten, 2017; Teixeira & Ferreira, 2018).

The study is structured as follows: following this brief introduction, we set out some theoretical reflections on competitiveness and innovation in the tourism sector, analysing some of the studies produced within this field before moving onto building a theoretical framework, formulating the research hypotheses and proposing a conceptual research model. The following section details the methodology, data, variables and methods of empirical analysis applied. Subsequently, we set out our results and their respective discussion. Finally, the closing section conveys the main conclusions and implications along with the limitations and suggestions for future lines of research.

2 Literature Review

Over time, there has been growing evidence as to how tourism is a phenomenon particularly characterized by immense levels of innovation. Some studies focus their considerations on the role of individual in businesses, considered especially distinctive and analysed and evaluated from diverse and different angles (Hjalager, 2010; Abreu-Novais, Ruhanen, & Arcodia, 2016; Christine A. McGladdery, 2017; Malek & Costa, 2015).

However, recent decades have seen a proliferation of tourism operators, which has simultaneously driven a rise in lifelong learning both in the younger and more elderly age groups as these have become perceived as providing endless opportunities for the development of new tourism products (McGladdery & Lubbe, 2017).

Innovation accounts for a critical factor to the success of tourism destinations as they deal with competitors, with this constituting the social and economic determinants of market demand (Zach & Hill, 2017). The tourism products, for example, are the calling card for attracting tourists to specific destinations. The diversification, intensification and combination of these products may be crucial to the competitiveness of businesses and to the sustainable development of regions (Benur & Bramwell, 2015).

Therefore, and underpinning the pertinence of this study, we identified the following four shortcomings in the literature: i) the concept of innovation has gradually risen in profile in the tourism literature but research into the strategies for tourism innovation has remained scant (Rodríguez, Williams, & Hall, 2014); ii) Empirical knowledge still remains limited and the barriers to the tourism sectors amount to a major obstacle to the development of innovation strategies.

The fundamental question is guaranteeing the long term growth and ensuring national, regional and business competitiveness of tourism regions (Divisekera & Nguyen, 2018); iii) The studies on destination competitiveness argue that the interested parties are unable to provide solutions to problems experienced in creating and aggregating the value of their supply of products and correspondingly resulting in shortcomings as regards the preferences of tourists and the products provided by regions (Dwyer, Cvelbar, Edwards, & Mihalic, 2012); iv) There are few studies analysing the business characteristics and influences of innovation and in addition to the importance of these characteristics for regional competitiveness, especially in tourism sector businesses (Backman, Klaesson, & Öner, 2017; Divisekera & Nguyen, 2018).

The great surge in global competitiveness inherently means that some destinations and their tourism businesses face major challenges over retaining their competitiveness and driving a large number of researchers to seek out the best approach to conceptualizing and measuring the competitiveness whether of destinations or of tourism businesses (Dwyer, Dragičević, Armenski, Mihalič, & Knežević Cvelbar, 2014; Okayasu, I.; Nogawa, H.; Casper, J.; Morais, 2016; Wong & Teoh, 2015; Santos, Ferreira, & Costa, 2014).

The concept of competitiveness is wide reaching and encapsulates any resource that any particular tourism company may deploy so as to gain competitive advantage (Algieri, Aquino, & Succurro, 2018; Ayikoru et al., 2013; Esparon, Stoeckl, Farr, & Larson, 2015; Izushi, 2015; Thomas & Wood, 2015). Our analysis makes an important contribution to these studies and parties interested in measuring the performance of the tourism sector in keeping with that defined and identified through analysis of the articles, the collection and processing of empirical data and that needs taking into consideration in future lines of research (Sainaghi, Phillips, & Zavarrone, 2017).

We believe that the need to identify and combine factors, resources and the barriers to innovation may enable businesses to raise and grow their performance and competitiveness (Ferreira & Fernandes, 2017).

Academic studies have already generated a multiplicity of points of view on this theme even while there are only very few studies exploring the relationships and variations in the factors of innovation in the relationship with the competitiveness of either the destination or its host businesses (Abreu Novais, et al. 2018).

Despite the already existing contribution made by the literature on competitiveness and innovation in the tourism sector, there still remains a lack of clarity and consensus as regards the ways in which these facets interrelate ((Alberti & Giusti, 2012; Castillo-Vergara, Alvarez-Marin, & Placencio-Hidalgo, 2018; Lei & Huang, 2014; Rodríguez-Victoria, González-Loureiro, & Puig, 2017; Zhao, Pan, & Chen, 2018; Henderson, Avis, & Tsui, 2018).

Our findings enable insights into former discoveries that lacked consistency in their exploration of the factors and barriers to innovation in destination and business competitiveness, seeking to contribute towards overcoming these shortcomings. Considering the conditions appropriate to enhancing and valuing innovation and the combination of the respective factors may contribute towards boosting the competitive performance whether of the region or its businesses and firms.

3 Research Methodologies

This study analyzes the importance of innovation and competitiveness in the tourist business. The study uses primary data from a final sample of 119 companies. The initial sample was 500 companies from the tourism sector on the island of Madeira operating in 2018, reflecting a response rate of 23.8%. We obtained 119 valid responses among them 48 accommodations, 10 restaurants and the like, 25 services, 22 entertainment activities and 6 transportation companies along with 8 other types of companies. At the statistical level, we used multiple linear regression models, analyzing the variables with any multicollinearity effects through the variance inflation factor (VIF). In order to evaluate the mediating effects of destination competitiveness in relation to innovation factors and barriers to innovation, together with business competitiveness, we apply the Sobel test (Sobel, 1982). We also use the application of econometric models.

4 Conclusions

This study also seeks to contribute to the scientific community and beyond and hence correspondingly proposes certain future lines of research that simultaneously emerge out of the limitations of this study. The weaker the combination of factors of innovation and greater difficulties in overcoming the barriers to innovation (Jasinskas & Majauskiene, 2016; O'Reilly & Cunningham, 2017; Okoroafor, 2014; Pikkemaat, Peters, & Chan, 2018a, 2018b; Polzin, von Flotow, & Klerkx, 2016), drive greater difficulties in obtaining competitive advantages (Maury, 2018). Hence, there arises the need to understand just how a company might identify its own resources, their rare and valuable potentials susceptible to improving the levels of business competitiveness through either the factors of innovation or through other strategic factors (Ferreira & Fernandes, 2017).

One of the limitations of our study stems from the unit of analysis being specific both to one sector, tourism, and to one region, the Autonomous Region of Madeira. Hence, in the future, it would be worthwhile applying this study to the country, Portugal, or still furthermore to make comparisons with other countries or regions. We would also like to add the need for further research on destination and business competitiveness related issues, the factors and barriers to innovation, making recourse to integrated quantitative and qualitative methodologies, and alongside the triangulation of methodologies to return more accurate and robust results on the factors influencing competitiveness (Santos, et al., 2014).

Finally, this quantitative approach helps and contributes to refuting some critical but separate directions proposed by previous studies and, therefore, advancing our understanding of the importance of the relationships among the factors and barriers to innovation within the scope of achieving competitiveness in terms of both the regional level and the combination of factors necessary to business competitiveness.

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PARALLEL SESSION 6

QUALITY CERTIFICATION OF THE RDI MANAGEMENT SYSTEMS AND PERFORMANCE: THE ROLE OF TIME SINCE CERTIFICATION

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Extended Abstract

Abstract

The aim is to explore the potential relationships between a set of variables and the perception of financial performance improvement, in the particular case of a firm that reaches the quality certification of its research, development and innovation managerial process. We conducted this empirical study among 66 firms that by the end of 2017 had reached that certification according to the new referential norm NP4457. The management of creativity has a negative impact on the manager's perception of financial performance, which is also influenced by the sales and the time since certification. Creativity management agglutinates the indirect effects of the network involvement and the managerial capabilities the firm holds. The longer the time since certification is, the greater the feeling that financial performance has improved. Implications for firms willing to reach the certification of its RDI management process are provided.

Keywords: Certification, RDI, Quality management system; NP4457 norm; Performance.

1 Introduction

Innovation is a source of competitive advantage that many companies are impelled to search in order to ensure the continuity and success of their business. It also ensures its steadiness and sustainability, improving the competitive positioning of the company in the markets in which it operates. Innovation represents a major source of advantage, beyond cost competitiveness, quality and response time, as well as allowing a differentiation in term of business survival in environments of increasing change and competition for the same goals (Bateman and Scott 1998; Kaufmann and Tödtling 2001; Porter 1998; Tomé 2016, 163–84). In order to achieve, monitor and control these objectives, the management competencies of the RDI management systems implemented and managed in companies are associated. Innovation management competencies are determinant for organizational performance, being a key element of quality management system initiatives.

The effectiveness of innovation practices depends on initiatives provided by the implemented system, indicating at this stage lower development costs (RDI) and therefore the improvements would come from lower costs in the management of innovation practices. Affirming that innovation management competencies are positively associated with organizational performance, Research, Development and Innovation (RDI) activities and internal performance improvements (Wang 2014).

The certification of RDI processes for companies has as objectives: evaluation by an external and independent entity, verification of the application of models and tools, systematic comparison of performance, credibility and transparency; Analysis and maintenance of the degree of implementation of the reference standard NP 4457, in particular with respect to the identification of key aspects, namely, interface management and knowledge production; management of ideas and evaluation of opportunities, project planning and operation - RDI management activities. Thus, it aims to improve the company's innovative performance, complying with the requirements established by NP 4457 (COTEC Portugal 2010). Certification is a mechanism for evaluating continuous improvement, ensuring that the company's practices are in accordance with the requirements of the RDI management system and stimulating its regular reflection.

The Portuguese Institute of Quality has created the NP 4457:2007 in order to provide a tool to support the management of Research, Development, and Innovation (RDI). This is based on a model of innovation, supported by interfaces and interactions between the scientific and technological knowledge, the knowledge about the organization and its functioning, the market and the society in general. Their activities are the subject of special attention and analysis as a result of its importance to the economic and social growth (NP4456 2007).

There is a debate in literature of the possible impact of the certification in a quality system on the financial performance (see for instance the recent review of Bernardo et al., (2015)). It seems that certified firms already obtained higher ratios of performance prior to the certification so there is no any significant improvement after the certification. However, this search is a challenge in light of the constant evolution of markets, which push the certified firms to seek a quick return derived from the process of innovation. On the other hand, the certification of a certain quality norm should improve the overall performance of the firm.

In this study the aim is to explore the potential relationships between a set of variables related to the management of the RDI process and the network of firms and the perception of financial performance improvement, in the particular case of a firm that reaches the quality certification of its research, development and innovation process. In particular, we will study the recently developed referential norm NP 4457: 2007 (Portugal). It should be noted that, the literature on the implementation and certification is, overall, scarce, particularly the literature devoted to explore the RDI Management Systems worldwide and, more restricted to the Portuguese case. Thus, we will show the situation in Portugal. Portugal is chosen because it is a relatively new Portuguese standard and moderately little used by companies. Because of the gap in the literature and studies of this certification, companies are still unaware of their potential and achievements of those who bet on the implementation and certification of the RDI Management System.

To carry out the study were used two instruments for data collection: identification of companies that have implemented the RDI management system in the database published on the Portuguese Institute for Accreditation, and miscellaneous information that was based on a questionnaire survey online sent to all the companies that have implemented the RDI management system. Defined as research aimed to explore the relations between a set of variables in improved financial performance in companies that come to certification of its research management process, development and innovation.

The design of the model of an RDI management system presented by the NP 4457 and the scheme developed in standard Spanish AENOR for the management of research, development and innovation (a model of Kline and Rosenberg modified) mentions that in macro environment any system RDI management is this: education and training system, among others, around the organization (NP4457 2007). In addition, both benchmarks mention that members with responsibility for the RDI Management System should have skills to manage and lead the system for continuous improvement (Tomé 2016, 163–184).

The success of any system is effectively the involvement of employees, as are the catalysts and responsible for the operation and management of any management system. According Wahid and Corner (2009), report that the top management, employees, the reward system, teamwork, continuous improvement, understanding the ISO itself, performance monitoring and reporting are critical success factors for the maintenance management system quality, in parallel, other authors mention that the companies in which top managers expresses great concern with regard to customer relations; motivations of employees and strategic planning are more likely to succeed in the certification thereof (Quirós, Almaça, and Justino 2013). Gregory Theyel (2000) says that to integrate the management of the system of undertakings, they should adopt various practices to improve innovation and environmental performance, in particular, total quality management, certification of suppliers, RDI and employee involvement in innovation and respective training.

Both benchmarks of national and Spanish RDI NP 4457 and UNE 166002 respectively, mention that innovation is the result of multiple interactions between scientific and technological knowledge, existing knowledge in the organization and external knowledge resulting from micro environment the RDI management system, including vendors, consultants, partners, distributors, customers and competitors.

Innovation and creativity are very important to all organizations wishing to obtain successful results of performance (Uslu and Çubuk 2015) and ensuring a more dynamic through the effective management of its resources (COTEC Portugal 2010). The effective management of human resources directed towards innovation, skills and capabilities of the companies that enhance the innovative development and organizational structures that ensure innovation activities are considered as the most relevant (COTEC Portugal 2010).

Amabile (1997, 53) states that innovation in the work environment = resources + management practices + organizational motivation; and the individual/team creativity = expertise + task motivation + creativity skills. With this, the author indicates that creativity fuels innovation, and the environment through organizational impact on creativity in each individual / team of an organization. According to Perry-Smith and Shalley (2003, 90) any individual can be creative in the middle organizational environment, creating new ways to carry out their tasks with new procedure or innovative ideas.

For NP 4457 (2007) RDI policy should be communicated and understood within the organization (NP4457 2007, 8), in this context, a study of Uslu and Cubuk (2015) held in Turkey, with some two hundreds of companies, confirms that knowledge management is effective in organizational creativity, but the most important factor that determines the organizational creativity is organizational communication followed by corporate innovation. The concept of stakeholder involvement with innovation activities stems from its acceptance as a wealth-generating mechanism, whose advantage results in benefits for the company and the community, thus reflecting the concept of innovation underlying the NP 4457 (2007, 4).

We used multivariate statistical techniques applied to primary data collected from companies listed in the database of IPAC, through an online questionnaire. We obtained 66 participants in this project, representing our sample 39% of the total population in 2017. The group issues under study aims to evaluate the degree of agreement in respect of claims on the involvement and improvement of RDI management system in enterprises.

Determine which effectively affects the improved financial performance, including RDI management skills, involvement of network and creativity management. With this, the questions arise: Certified companies that make a creative management have better financial results? The RDI certification help creativity management? Over time, after certification, these companies have better results with creativity management?

2 Literature Review

Several theoretical and empirical studies on quality, innovation and implementation of RDI management system, as, management capabilities, network involvement and creativity management were analyzed. In order to structure the understanding article theme, sub-points were defined: the role of management capabilities, the role of network involvement and the role of creativity management. In order to structure the article, sub-points were defined: the impact of management capabilities, the impact of network involvement and size e the impact of creativity management.

The Portuguese Standard 4457 is the reference basis of this study, which defines the requirements for an RDI management system, with this there are key pillars for the implementation and certification. With this, in the study, control variables were introduced in order to verify their impact on the macro variables already identified.

NP4457, a Portuguese normative reference, identifies three macroeconomic variables that affect and have an impact on the quality management of the RDI process, namely the organization's capacity to manage this process and its quality system, the level of involvement of employees and external agents. An organization manages as diverse sources of creativity. Thus, we will use as macro variables, based on the referential standard, to measure an improvement in financial performance subjectively in this investigation. This article aims to gather facts and literature that prove and justify relationships as defined in study.

3 Research Methodologies

We analyzed a unique database composed by a sample of 66 firms that by the end of 2017 (representing 39% of the total sample) had reached the quality management certification of its process of RDI according to the NP4457:2007 Portuguese norm. The reasons to choose this context are twofold. First, the Portuguese norm is one of the first to be developed worldwide aimed at certifying the management quality of the RDI process, along with the Spanish norm ISO-UNE-166002:2014. Second, Portugal is usually an innovation-lagged economy, in particular since the EU intervention after the 2008 global crisis. The European Commission of Science, Research and Innovation performance of the EU (2016, p. 37), although the intensity of RDI has increased over the period 2007-2014 in the 21 Member States. For most, accelerated growth in RDI intensity is required to meet national RDI 2020 intensity targets.

For Portugal and others (Romania, Luxembourg, Portugal, Spain, Sweden, Croatia and Finland) they must reverse a decreasing trend (European Commission, 2016). Therefore the context offers a unique set of features that may shed light on whether and to what extent this type of referential norms help improve and potentially speed up the results of managing RDI.

4 Discussion and Results

The results were obtained using the exploratory factorial analysis in STATA v12 and SmartPLS v3.2.8.

The variability of the items of the constructs has in common the mean variance extracted (AVE). As such, for example, creativity management items share $\approx 63\%$ variability and IT skills management share 54% variability. It is also added that the results suggest approximately $\approx 40\%$ of financial performance variation can be explained by the capacity / skills of management in RDI, creativity management, network involvement and control variables included in the model.

The management of RDI significantly affect the financial performance of certified companies. The creativity management positively influence the results of the financial performance of companies. The companies with RDI system certification that make creative management have best results over time.

The results show that management capabilities have a positive impact on network involvement and in network engagement.

Each company should determine which stakeholders are relevant to the RDI system and an organization by consulting and involving them to identify their needs and expectations, which may be expressed or implied.

For companies certified by NP 4457 with the highest level of creativity management it seems that the greater the perceived improvement in financial performance. This significant negative impact seems to imply that the certification is seen as just more administrative workload, which does not help improve financial performance. On the other hand, the longer the time elapsed since certification, the higher the feeling that the financial performance has improved. This means that, as time passes by, the overall sensation is that the financial performance has increased.

Certified companies that implement high levels of creativity management do not realize any gain due to certification. In addition, they find that overall financial performance has deteriorated more and more over time, they find that this norm only involves increasing levels of bureaucracy, larger administrative services.

5 Conclusions

The results show that there is no direct relationship between management capacities and network involvement to improve financial performance. On the other hand, the results show that management capability affects the financial performance of Companies certified by NP4457, through network involvement and creativity management. In all organizations, their success depends, on the part, on the management strategy and ambition of their own. Each organization that implements an RDI management system and ensures its continuous improvement will lead to a significant improvement in financial performance, sales and asset growth (sales / assets) (Corbett, Montes-Sancho, & Kirsch, 2005; Naveh & Marcus, 2005). Of course, in cases where the organization does not leverage its resources and its stakeholders, it will not bring greater value to the organization, in that sense it will not improve financial performance.

And even if it takes advantage of, but implements or materializes new ideas, new products, new processes will not affect financial performance, confirming the theory of several authors, Porter (1990), Kaufmann e Tödting (2001), Bateman e Snell (1998), Saraiva e D'Orey (1999), that is, for the organization to guarantee its place in the market will have to innovate, with new products, new processes, new innovations for the market. Bouchikhi and Kimberly (2001) argue that companies need to innovate in order to survive, otherwise they will "die." "... not to innovate is to die" wrote Christopher Freeman (1982), quoted by Trott (2005).

The certification and development of the implementation of the RDI management system is a way forward and continuous improvement, simplifying tasks, avoiding bureaucracy and adopting flexible solutions. Organizational competitiveness is and will be always present in the day-to-day of each organization, as well as the differentiating factor that makes offers and has is of utmost importance for each organization. The implementation of an RDI management standard to organize, manage and improve a management system that systematically create internal value and customer products and each organization services through a planned process of innovation, identifying opportunities improvement in research, development and innovation, creating an organizational culture of innovation.

We acknowledge some limitations of our study that future research should address. The number of cases in the sample made it difficult to test the model in a variance-covariance based SEM. The analysis of just one country in our study is a second limitation. Future research could benefit from the replication of our work in similar and dissimilar contexts, and larger samples will allow more accurate estimations about the actual intensity of the variables. As long as the norm application expands to neighboring countries we will have the chance to make comparisons, the most immediate with Spain and the recently approved UNE166002:2014.

Yet the critical issue was whether this recent norm could help increase the performance of the RDI process. As shown, the financial performance improvement is contingent to the level of creativity management the certified firm undertakes and the time elapsed since certification, with different slopes for low and high levels of creativity management. Future studies should take into account the effect that time since certification have in the feeling of financial performance improvement (the retrospective effect). Comparative studies should be conducted between certified and non-certified firms. Further comparisons can be made if scholars performance duration time regressions, such as Cox regressions or any of the parametric models that can account for the "time to event" variable, in light of the effect we found.

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PARALLEL SESSION 6

WHY IS SOCIAL INNOVATION EMERGING AS A NEW FRAMEWORK FOR RURAL DEVELOPMENT? A LITERATURE REVIEW

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Extended Abstract

Abstract

The importance of social innovation as an instrument for regional development has been rise. Over the last decade it has also been approached as a driving force and framework for rural development with a significant increase of studies. This article aims to analyze the state of the art on the importance of social innovation for rural development, its authors and in which thematic areas have addressed social innovation in rural context through a systematic literature review. The studies show that there are three main thematic approaches: 1) Resilience and Sustainability; 2) Governance and Rural Communities; 3) Management and Technology. In addition, it is intended to check what emerging themes and opportunities exist for future research in this area, which has found that food and transition are strong and recent issues, as well as the need for new studies on rural communities' capacity for social innovation, thus contributing of social capital and population growth.

Keywords: social innovation, rural development, systematic literature review

1 Introduction

Social innovation has gained importance over time, which has been seen by several authors as new, more effective and sustainable responses to the new societal challenges of the 21st century, promoting structural changes to improve well-being and quality of life , as a framework to promote regional development, new ways of generating social change through the empowerment of citizens and the reorganization of civil society, including the state, to meet social and human needs, creating social value (BEPA, 2010; Cajaiba-Santana, 2014; Marques et al 2018; Moulaert & Nussbaumer, 2005; Pol & Ville, 2009).

Rural areas are considered by the OECD to be an opportunity for prosperity and well-being for the 21st century (OCDE, 2018) and play an important role in responding to new societal challenges such as climate change, food security, scarcity of resources or social inequalities. In addition they have a wide variety of fauna and flora, landscapes and natural environments, fertile soils for food supply and contribute to the maintenance of the cultural heritage of a region. However, rural areas are confronted with high development structural problems (Bock, 2016) and are therefore left behind, compared to urban areas (Rodríguez-Pose, 2018).

Until the end of the first decade of 21st century, social innovation was seen by researchers from the point of view of well-being and human and social needs, ignoring the importance of the territory, concentrating essentially on the new relations in an urban context. After acknowledging the need for an endogenous approach to improving European competitiveness and responding to new societal challenges, social innovation has emerged as a key element for regional development, sustainable development and more recently for rural development.

The objective of this article is to understand the state of the art from the point of view of the importance of social innovation for rural development and how it is approached by the main authors and researchers in the rural context, trying to answer the following questions:

- Why is social innovation emerging as a new framework for rural development?
- What state of the art relates the importance of social innovation for rural development?
- What are the main research topics when addressing social innovation in the context of rural development?
- What opportunities exist for future investigations?

To answer these questions, the second section will analyze the state of the art with the main authors of the importance of Social Innovation for Development until the end of the first decade of the 21st century and the pioneering authors on the importance of Social Innovation for Rural Development. In the third and fourth sections a Systematic Review of Literature was made, which includes a descriptive analysis and a thematic analysis as a way to respond to the three secondary questions with more precision and comprehensiveness. The last section describes the main conclusions obtained, as well as suggestions for future research.

2 Literature Review

2.1 *Social Innovation and Development*

The first concepts of Social Innovation emerged at least since the 19th century associated to a social order and social regulation for the division of labor as innovative responses to technological change and as reinforcement to social cohesion (BEPA, 2010; Marques et al., 2018).

In the 20th century, the concept of Innovation was associated with a positivist vision which for Joseph Schumpeter assumes an important role for Economic Development, defining as new combinations in the production process, originating new products capable of replace the old ones, essentially aiming profit, emphasizing the role of the entrepreneur as the driving force of structural changes in society (Schumpeter, 1934).

Over time, new definitions have emerged associated with the concept of Technological Innovation as the generation, validation and implementation of new ideas, processes, products or services (Thompson, 1965), as a tool for entrepreneurship (Drucker, 1985), new forms of to generate organizational change in internal or external environments (Damanpour, 1991) or presented as a discipline, capable of being taught in a multidisciplinary perspective and a way of exploring change as new business opportunities or services (Drucker, 2006).

In parallel, at the end of the 1960s, Social Innovation was associated with the emergence of alternative or cooperative companies as a response to social needs neglected by the market and the first social movements (Fossati, Degavre, & Lévesque, 2018). However, since the 1970s, due to economic stagnation, rising inequalities and racism, social innovation has been seen as a reaction to technology positivism and capitalism, and so there has been an exponential increase of studies by several authors (Marques et al., 2018) simultaneously with other alternative concepts of Economic Development, such as Sustainable Development.

In the last decade of the 20th century, the importance of technological innovation was evident as a response to the decline in European competitiveness and productivity compared to the US and Asian countries. At the same time, the decline in competitiveness and global technological modernization had the effect of questioning old public policies and increasing private initiatives, through collective action, associated with the concept of Social Economy as a sign of public policy displeasure and in response to new social services, employment support, local development, fair trade or the environment, thus pushing for the modernization of Public Management (Fossati et al., 2018).

However, during the Lisbon Summit, the European Commission outlined a strategy to transform Europe of the 21st century into a knowledge economy through Innovation and Technology, since only the Knowledge Industries can increase productivity and employment and have the capacity to strengthen social and territorial cohesion (European Commission, 2004).

The first decade was marked by a significant increase in multidisciplinary studies on Social Innovation, thus allowing a clearer differentiation in relation to the concept of Technological Innovation in terms of its definition, characteristics, processes and goals (Mulgan, 2006; Mumford, Phillips et al., 2008).

For Mumford (2002), Social Innovation is defined as the generation and implementation of new ideas about how people establish new relationships or social interactions in response to one or more common goals (Mumford, 2002). In addition, Mumford puts forward some hypotheses about the conditions under which Social Innovation takes place, based on the strategies of Social Innovation by Benjamin Franklin in the eighteenth century. In total, Mumford identified eight hypotheses about the nature of Social Innovation: 1) Problem identification and definition; 2) comes through the efforts of talented and / or marginalized individuals with a unique life experience; 3) arises from ideas and solutions in response to one or several causes of the problem; 4) the feasibility of the solution makes possible new future developments; 5) The benefit of the solution must be demonstrated in a short period of time; 6) needs funding; 7) the importance of persuasion; 8) favorable environment for the reorganization and restructuring of social relations to solve the problem in question (Mumford, 2002).

For Mulgan (2006), Social Innovation refers to innovative activities and services with the objective of responding to a social need. These activities are disseminated by organizations whose primary purpose is social, in the face of discontent, led by individuals or movements seeking social change, having as characteristics the feeling of exclusion, resentment, passion and commitment, persuading them to abandon old habits (Mulgan, 2006). Mulgan defines four steps for the Social Innovation process: 1) Understand needs as a starting point for generating ideas and identifying potential solutions; 2) Development, prototype and pilot of the solution; 3) Evaluation, growth and diffusion of the solution; 4) Learning and evolution of the solution.

For Phill (2008), a Social Innovation initiative translates into a solution to a social problem capable of creating and accumulating value in society or social value, rather than the appropriation of value by private individuals. The solution must be innovative and more effective, efficient, sustainable or fair than existing solutions, in which all parties involved obtain some benefit (Phillips et al., 2008). In addition, Phill et al. (2008) suggest that Social Innovation transcends sectors and levels of analysis, emphasizing the role of the social entrepreneur in the identification of an opportunity to solve problems to meet a social need that allows to be reflected in evidence.

With the clarification of the concept of Technological Innovation, some authors began to question the clarity of the concept already defined by other authors, with the aim of contributing to its evolution and importance for the improvement of social well-being and quality of life (Dawson & Daniel, 2010; Pol & Ville, 2009).

In addition Pol & Ville suggest that this impact can occur in four types of objectives: a) Motor of social change; b) Response to social problems; c) Ideas for the public goods; d) Response to needs not met by the market.

According to Dawson (2010), Social Innovation plays an important role in improving the well-being of people, communities and society. It is driven by social change and the definition of collective strategies through social entrepreneurship, reconciling business strategies with social objectives. In addition, it points to science and technology in contributing to assess indicators, the social value of change, and their processes (Dawson & Daniel, 2010).

In another perspective, the first studies related to Social Innovation with the territorial development (Moulaert & Nussbaumer, 2005; Moulaert & Sekia, 2003), focused on governance policy for local and community development in an urban context, emphasizing the importance and empowerment of civil society for decision-making and contributing to new relationships in solving urban problems (Moulaert et al., 2007; Moulaert et al., 2005; Swyngedouw, 2006).

For Moulaert et al. (2005), Social Innovation is assumed as a tool for empirical research on socioeconomic development and local governance in an urban context. For these authors, social innovations arise due to tensions between the community itself and society, the central state and institutions, as well as the search for new opportunities that need to be answered. Empowerment of communities and the organizational and institutional dynamics of civil society are essential in responding to social exclusion through inclusion processes, meeting human needs, mobilizing resources for the local social economy, and reorganizing fields of action, the creation of sectoral institutions of civil society, state and market taking into account the specificities of the territory (Moulaert et al., 2005).

For Moulaert et al. (2007), Social Innovation is an alternative concept of urban development and changes in the city, capable of empowering movements more firmly in local politics and institutions, focused on the satisfaction of human needs and establishing new relations in the neighborhood and community governance (Moulaert et al., 2007).

For Swyngedouw (2006), political governance is one of the Social Innovation dimensions, in which the new relationships generated by the participatory movements of civil society originate new models of governance beyond the State, thus contributing to an inclusive development model at the various levels of geographic scale (Swyngedouw, 2006). These movements and new relationships are often aimed at challenging the traditional model in the way of doing politics. These new relationships in civil society allow us to redefine the meaning of political citizenship and, consequently, the nature of democracy, since innovative movements usually arise due to tensions between civil society and the state, leading to the emergence of new institutions, new actors, the consolidation of new technologies, while weakening traditional policy actors, giving rise to new rules imposed by the market (Swyngedouw, 2006).

In Europe, following the new growth and employment strategy through Innovation and Technology, the first decade of the 21st century was marked by the modernization of public management (Fossati et al., 2018), and therefore, despite the evolution of Innovation Social concept, entrepreneurs were rejected

However, at the end of the first decade, Europe realized the difficulty in implementing this strategy, as it was found that new tools would be needed to solve structural problems such as social and territorial cohesion. On the one hand, the effectiveness of innovation policies depended on alignment with the different resources and assets of the regions (Foray et al., 2009), on the other, existing structures and policies were incompatible to break some of the societal challenges such as climate change and other environmental challenges, poverty reduction, growth promotion and citizen well-being (Murray et al., 2010).

In June 2008 the European Union adopted a new social agenda with the aim of creating favorable opportunities in response to a new social reality and new challenges such as climate change, ageing, rising unemployment or exclusion of vulnerable groups such as refugees or migrants (BEPA, 2010).

At this point that European Union realized that Sustainable Development could fit as a fundamental solution, placing at the center the growing importance of Social Entrepreneurship and Social Innovation as a response to societal challenges (BEPA, 2010) and as a way to reduce social inequalities and between territories.

The European Union defines Social Innovation as new responses to pressing social needs, which affect the process of social interaction. It aims to improve human well-being (BEPA, 2010).

From this new agenda, the clarification of the concept of Social Innovation enters in a new stage (Cajaiba-Santana, 2014; Marques et al., 2018) with a significant increase of studies on the importance of Social Innovation for Development.

For Cajaiba-Santana (2014), the approach to the study of Social Innovation was divided into two perspectives. The first is an agent-oriented perspective, that is, an individualistic approach, whose Social Innovation is created through the behavior of a specific individual or group of individuals. The second perspective is a structuralist approach in which Social Innovation is perceived as being determined by the external structural context. Cajaiba-Santana combines the two perspectives, to which individual agents and their characteristics are decisive for Social Innovation and institutions with a role that allows and restrains Social Innovation (Cajaiba-Santana, 2014). For Cajaiba-Santana (2014), Social Innovation is defined as new social practices created from collective, intentional and goal-oriented actions that aim at social change through the reconfiguration of how social objectives are fulfilled (Cajaiba-Santana, 2014).

For Marques et al. (2018), the definition of Social Innovation can be classified according to the scale and scope of the change and that can be taken into account both from the point of view of research, nor normative or concept used in practice: a) Structural; b) Radical; c) Incremental; d) Instrumental (Marques et al., 2018).

Since the end of the first decade, Social Innovation studies have increased in the light of several themes such as Social Entrepreneurship (Dacin et al., 2011, Macke et al., 2018, Moore and Westley, 2011; van der Have & Rubalcaba, 2016), Networks and Governance (Baker & Mehmood, 2015, Seyfang & Haxeltine, 2012, Voorberg et al., 2015), Sustainable Development (Boons & Lüdeke-Freund, 2013, Desa & Koch, 2014, Eichler & Schwarz, 2019) And the first studies related to Rural Development.

2.2 Social Innovation and Rural Development

Since the 20th century, rural development in Europe has been supported by policies in many ways (Bock, 2016). On the other hand, until the end of the first decade of the 21st century, research on Social Innovation was very focused on local communities in an urban context and its importance for Sustainable Development. Several authors have begun to point out the importance of innovation (Dargan and Shucksmith, 2008), networks and social capital (Lee et al., 2005) and finally, since 2012, the role and characteristics of Social Innovation (Bock, 2016, Bosworth et al., 2016, Duma et al., 2016, Neumeier, 2017, Neumeier, 2012) in a rural context.

The growing interest in the importance of Social Innovation in rural areas arose from the contribution of Neumeier (2012), questioning why social innovations are important for rural development, proposing new guidelines on how to do research in this context, suggesting a basic definition and proposing a process model of Social Innovation in a rural context. Neumeier defines social innovations as changes in attitudes, behaviors or perceptions of a group of people gathered in a network of aligned interests that in relation to the horizon of group experiences lead to new and better forms of collaborative action inside and outside the group (Neumeier, 2012).

This definition allows to be applied, both in urban and rural contexts, and in rural areas. Neumeier suggests that these improvements can occur either at the economic level of a region, or in improving the quality of life of the community or improving public infrastructures, for example, the cooperation of different communities for joint land-use planning economic activities, resulting in more income, tax revenues and welfare of the communities involved. (Neumeier, 2012).

As for the process model of Social Innovation, Neumeier defines the process of Social Innovation in three phases:

1. Problematization: triggered by one or group of actors internal or external to the community, through the identification of a problem or an idea;
2. Expression of interest: the changes in the attitudes of the initial actors arouse the interest of new actors, who identify advantages in adopting or imitating new practices.
3. Delineation and co-ordination: at this stage the network development of a set of actors with aligned interests to which new behaviors and attitudes are negotiated, resulting in learning and solidification processes, being, however, a dynamic network in which there is a constant stream of inputs from new actors and outputs. The success of Social Innovation depends on the adoption or imitation by new actors.

Neumeier, (2012) stresses the importance of the role of social innovation in rural communities in developed, democratic, capitalist and industrial countries. As a result of this, there is a shift from sectoral to territorial strategies, in which the new policies encourage the citizens participation to better understand their regions (neo-endogenous paradigm of development), allowing the change in their attitudes and behavior, thus facilitating the development of sustainable structures and the establishment of a balance which, on the one hand, creates favorable conditions for innovation, creativity, new ideas and the ability to act and, on the other hand, maintain the necessary stability (Neumeier, 2012).

Complementing the view of Neumeier (2012), as well as Pol et al. (2009), Bock (2012) argues that it is necessary to clarify a little more the concept of Social Innovation so that it can be applied in agriculture and from the point of view of Rural Development, suggesting three interpretations for its definition (Bock, 2012) :

1. The social mechanisms of innovations - innovation occurs in the social context and in interaction with the social relations, practices, norms and values in which it is inserted, where success depends on how well fit in the social context;
2. The social responsibility of innovations - innovations must be socially accepted, relevant and ethically appropriate and therefore stakeholders must be involved in the innovation process. Success results from collective action and creative social learning in order to respond to unmet social needs. In the rural context, it includes needs such as income, employment, medical care and other public services.
3. The innovation of society - Social Innovation plays an important role for the improvement of society as more inclusive, fair and resilient.

For Gobattoni et al. (2015), the change in attitudes of rural communities towards traditional activities makes it possible to perceive their territory, thus facilitating the creation of networks to promote effective actions and social innovations, thus increasing the social capital of the territory for a more sustainable rural development (Gobattoni et al., 2015).

Since then, other studies have emerged, such as Bock (2016), which also offers an interesting approach to research on the importance of Social Innovation for rural development and, in particular, marginalized rural areas and territorial inequalities, since this problem can be part of a broader process of social change, affecting society as a whole and not just local communities in particular (Bock, 2016).

According to Bock (2016), depopulation is one of the common characteristics of marginalized rural areas and leads to discursive labeling and stigmatization as "abandonment areas", causing negative processes, hampering perceived quality of life. It adds that depopulation does not translate into a cause for poor business productivity and profitability, but as a consequence of major socio-economic and political changes, whose main factors are globalization, increasing mobility of capital and people, urbanization and the crisis (Bock, 2016).

Social Innovation can therefore be a powerful and effective tool for the development of marginalized rural areas, since it is strongly linked to local development and the need to take into account an endogenous development model. In addition, this results from collaboration, networking, citizen empowerment or new relationships between local and external actors, and are therefore critical success factors in the face of structural problems such as lack of roads or public services, changes in socio-economic conditions, unemployment, disinvestment, ageing and the lack of connectivity between territories (Bock, 2016).

For Bock, social innovation in marginalized rural areas is favorable when certain conditions are met, such as: a) citizens' civic action to provide services that do not exist in a logic of mutual aid, b) self-determination, management and resilience of cooperatives, c) the reorganization of the state's role in order to contribute to new relations between the various sectors; d) the need to reorganize local services through collaboration between citizens, businesses, the third sector, public administration and stimulation of the connectivity of rural areas; e) the desire for social change to improve the quality of life; (f) the desire for high-quality, small-scale and sustainable products and services; g) the new technologies that allow to act with low cost (Bock, 2016).

Bock (2016) concludes that Social Innovation differs from traditional Rural Development approaches in some aspects such as reaction to austerity policies, self-confidence and self-organization, less trust in State support, collaboration with other relevant and external partners, use of ICTs, the development of alternatives outside the social context, and positive rural labeling (Bock, 2016).

As regards the role of Social Innovation for public policies for Rural Development, in particular the LEADER program, the European Union's rural policy instrument, Dax et al. (2016) analyzed the impact of the Rural Development Programs 2007-2013 in two countries, noting that the effectiveness of these programs fell far short of potential due to a tendency towards centralization of the State and a decrease in the role of regional entities, as well as the existence of rigid structures, arriving at the conclusion that Social Innovation plays a fundamental role for the success of these policies, only when there is transverse and multilevel governance in the response to the Societal Challenges (Dax et al., 2016), complementing the neo endogenous view of Neumeier and Bock.

In another perspective, Ludvig et al. (2018) emphasize the importance of aligning the political objectives with the objective of Social Innovation, which is a multisectoral issue, characterizing the objectives in three categories: 1) Policies aimed at vulnerable groups; 2) Responding to societal challenges and 3) Participatory inclusion of society (Ludvig et al., 2018). In addition, it used forestry initiatives and policies as an example to define facilitating or blocking factors for these policies.

3 Research Methodologies

Social Innovation reveals several approaches and perspectives, with no a general consensus about its definition, themes and areas of action. However, its importance for Regional Development has been increasing, particularly in the rural context. For a better understanding and comprehensiveness of the studies on the importance of Social Innovation for Rural Development, a brief Systematic Literature Review was done with the objective of analyzing in more detail the State of the Art and trends for future researches, since this method is characterized by the use of a rigorous, replicable, scientific and transparent process (Eichler & Schwarz, 2019). The process will be carried out in three stages: 1. Review Planning; 2. Realization of the Review; 3. Analysis and Dissemination of Results (Tranfield et al., 2003).

Taking as an example several studies related to innovation and entrepreneurship, for the bibliometric analysis (Dahlander & Gann, 2010; Santos et al., 2018), the Web of Science Core Collection database was used as a comprehensive database and one of the most widely used academic journals. It also includes a set of citation indexes relevant to social sciences (SSCI, Science Citation Index Expanded [SCI-EXPANDED] and, more recently, the Emerging Sources Citation Index [ESCI]).

An advanced search was conducted for articles published between 1900 and 2019 under the terms "social innovation" and rural development related words like "rural", "rural development" or "rural community" in the topic. Preliminary results of the survey included 94 documents, the first of which was dated 2010.

Filter Level	Filter	Filtered Publications
1	Advanced Search: <i>TS=(“social innovation”) AND TS=(rural OR “rural development” OR “rural communit**”) Considered 4</i>	94
2	indexes of Citation: SCI-EXPANDED, SSCI, CPCI-SSH, ESCI	85
3	Only Articles	63
4	Only in English and all scientific areas	52

The research was improved, filtering in four citation indexes (SCI-EXPANDED, SSCI, CPCI-SSH and ESCI), containing only articles with English language and considered all the scientific areas for the multidisciplinary that characterizes Social Innovation, according to the configuration of the research in Table 1, resulting in a final sample of 52 articles. For the thematic analysis, 52 articles were analyzed through a co-occurrence analysis (Pinto, 2015) to identify potential current and emerging issues relating Social Innovation with Rural Development and the analysis of citations to identify the main authors to take into account in an investigation in this area. All the bibliometric analysis was done using VOSviewer software (van Eck & Waltman, 2010).

4 Discussion and Results

4.1 Descriptive Analysis

Analyzing the evolution of the publications, the emergence of the theme is observed and confirmed, having been more regular since 2012, and about 90% of the articles have been published since 2015. It is also worth noting that until March 2019, 17% of total articles were published.

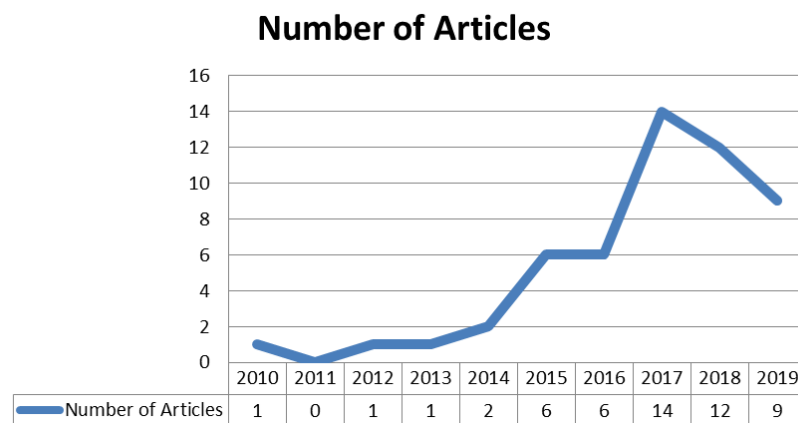


Figure 1

Table 2

The ten articles with the most quotations

#	Article	Authors	Journal	Date	Number of citations
1	<i>Why do Social Innovations in Rural Development Matter and Should They be Considered More Seriously in Rural Development Research? - Proposal for a Stronger Focus on Social Innovations in Rural Development Research</i>	Neumeier, Stefan	SOCIOLOGIA RURALIS	January 2012	76
2	<i>The Leader programme 2007-2013: Enabling or disabling social innovation and neo-endogenous development? Insights from Austria and Ireland</i>	Dax, Thomas; Strahl, Wibke; Kirwan, James; et al.	EUROPEAN URBAN AND REGIONAL STUDIES	January 2016	27
3	<i>Local responses to global technological change - Contrasting restructuring practices in two rural communities in Austria</i>	Fink, Matthias; Lang, Richard; Harms, Rainer	TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE	February 2013	23
4	<i>Rural Marginalisation and the Role of Social Innovation; A Turn Towards Nexogenous Development and Rural Reconnection</i>	Bock, Bettina B.	SOCIOLOGIA RURALIS	October 2016	20
5	<i>Sustainable rural development: The role of traditional activities in Central Italy</i>	Gobattoni, Federica; Pelorosso, Raffaele; Leone, Antonio; et al.	LAND USE POLICY	November 2015	13
6	<i>Sustainable rural development: The role of traditional activities in Central Italy</i>	Neumeier, Stefan	GEOGRAPHICAL JOURNAL	March 2017	11
7	<i>Social innovation in rural development: identifying the key factors of success</i>	Healey, Patsy	PLANNING THEORY & PRACTICE	2015	9
8	<i>Civil society enterprise and local development</i>	Rover, Oscar Jose; de Gennaro, Bernardo Corrado; Roselli, Luigi	SUSTAINABILITY	January 2017	7
9	<i>Social Innovation and Sustainable Rural Development: The Case of a Brazilian Agroecology Network</i>	Dax, Thomas; Oedl-Wieser, Theresia	STUDIES IN AGRICULTURAL ECONOMICS	2016	7
10	<i>Rural innovation activities as a means for changing development perspectives - An assessment of more than two decades of promoting LEADER initiatives across the European Union</i>	Bosworth, Gary; Rizzo, Fulvio; Marquardt, Doris; et al.	INNOVATION-THE EUROPEAN JOURNAL OF SOCIAL SCIENCE RESEARCH	2016	6

Neumeier (2012) is the most cited article (table 2), reflecting the fact was the first to address the importance of Social Innovation for Rural Development. Since then, other articles emerged related to the characteristics and nature of Social Innovation in rural context, public policies and the resilience of communities for sustainability (Bosworth et al., 2016; Fink, Lang, & Harms, 2013; Heumeiy, 2015; Neumeier, 2017; Rover by Gennaro, & Roselli, 2017). The journal Sociologia Ruralis is the most cited of the sample with 97 citations and also one of the most searched by the researchers with an impact factor of 2,632. Table 3 presents the journals and / or sources with the highest number of citations, as well as the corresponding number of articles and the impact factor in 2017.

Table 3
The nine journals with the most quotations and their impact factors

Source	Number of articles	Citations	Impact Factor (2017)
<i>SOCIOLOGIA RURALIS</i>	3	97	2,632
<i>EUROPEAN URBAN AND REGIONAL STUDIES</i>	1	27	2,280
<i>TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE</i>	1	23	3,131
<i>LAND USE POLICY</i>	1	13	3,194
<i>GEOGRAPHICAL JOURNAL</i>	1	11	2,563
<i>PLANNING THEORY & PRACTICE</i>	1	9	1,860
<i>STUDIES IN AGRICULTURAL ECONOMICS</i>	2	8	0,180
<i>SUSTAINABILITY</i>	5	7	2,075
<i>INNOVATION-THE EUROPEAN JOURNAL OF SOCIAL SCIENCE RESEARCH</i>	1	6	1,018

In relation to the research fields of the articles in the sample (Figure 2), 32.69% of the articles are associated to the environment sciences, followed by business economics (30.77%) and geography (15.38%). We can also verify through the sample the multidisciplinary character of Social Innovation, since disciplines in various scientific areas are represented. In relation to the authors with the highest number of articles published, it is verified that the two authors with more articles (Dax and Ludvig) are linked to public policies (Table 4). As regards the countries of origin, Italy has the highest number of articles published with 23.08%, followed by Austria and England with 17.31% each and the Netherlands with 9.62% as can be seen in Table 5. To conclude the descriptive analysis, we also included the origin of the authors by continent, as can be seen in Figure 3. The most representative continent is Europe with 59 authors (74.7%), followed by the Americas with 9 (11, 4%) and Asia with 5 (6.3%).

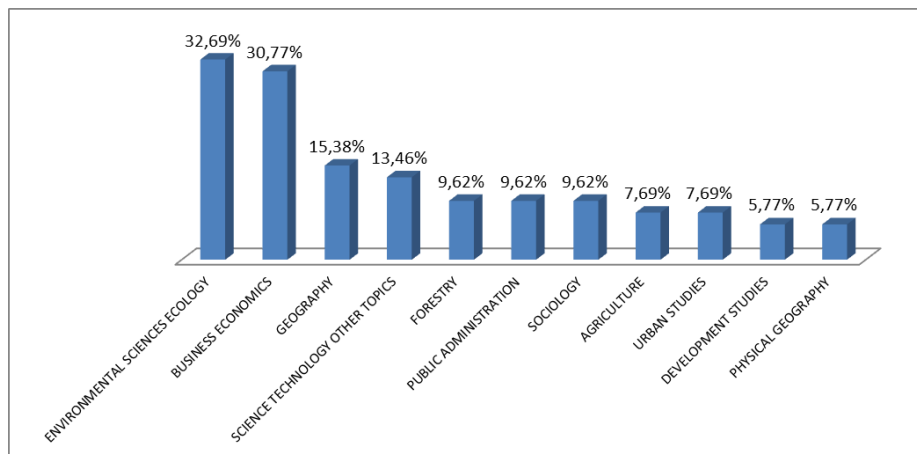


Figure 2 Research Fields

Table 4
Authors with two or more published articles

Author	Articles
DAX, T.	4
LUDVIG, A.	4
WEISS, G.	3
HART, TGB	2
MEMBRETTI, A.	2
NEUMEIER, S.	2
NJINIK, M.	2
PERLIK,	2
RAMOROKA, KH.	2
SECCO, L.	2

PERLIK,

Table 5
Countries with three or more published articles

Países	Artigos	Continente
ITALIA AUSTRIA	12	23,08%
ENGLAND	9	17,31%
NETHERLAND	9	17,31%
SPAIN	5	9,62%
AUSTRALIA	4	7,69%
GERMANY	3	5,77%
RP CHINA	3	5,77%
SCOTLAND	3	5,77%
SOUTH	3	5,77%
AMERICA	3	5,77%
SWITZERLAND	3	5,77%
USA	3	5,77%

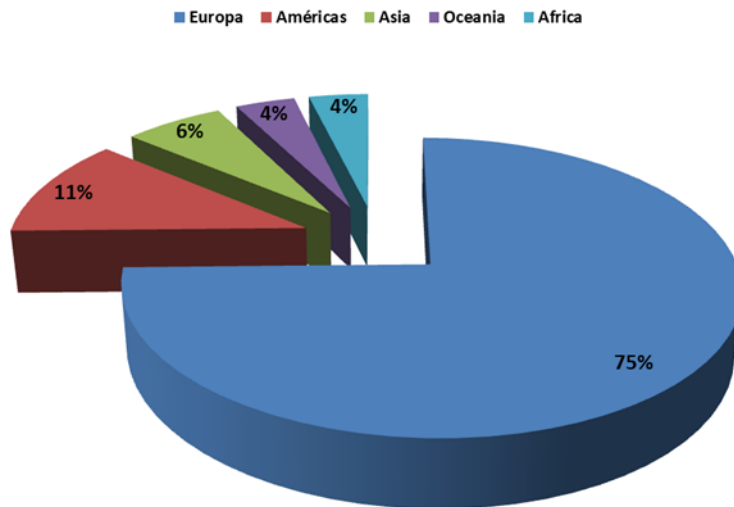


Figure 3
Representation of authors by continent

4.2 Thematic Analysis

As a way to deepen knowledge about who are the main authors and what are the main research topics in this research field, co-citation by document and co-occurrence analysis techniques were used to map the knowledge networks in this field.

4.2.1 Co-citation Analysis

Through a brief analysis of the co-citation networks per document (see Fig. 4), it was verified that 18 authors with a minimum of 9 citations are grouped in three clusters. The red cluster includes Neumeier, Dargan and Bock and indicates that it is related to the importance of Social Innovation in rural areas. In the blue cluster, the authors who stand out most are Ray, Mumford and Lee, authors of the first decade and indicates that it is related to the importance of social capital and community resilience for the sustainability of rural areas. In the green cluster, the most cited authors are Pol & Ville, Murray and Cajaiba-Santana, which, as we have seen, is related to the need to better clarify the definition and characteristics of Social Innovation.

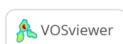
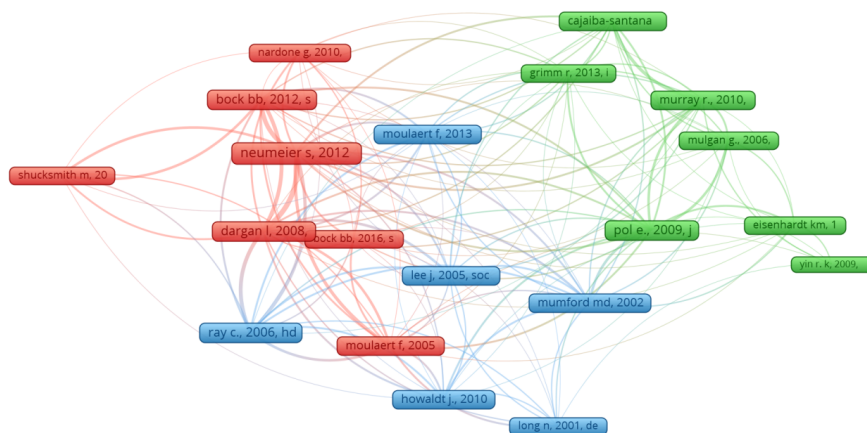


Figure 4: Analysis of co-citation by document

4.2.2 Analysis of co-occurrences

In order to identify the main research themes regarding Social Innovation in rural areas, a total of 323 different keywords were identified, representing a rate of 6.21 keywords per article (including those of the Author and KeyWords Plus). The analysis focused on keywords with at least three occurrences, giving rise to twenty terms with the highest levels of co-occurrences.

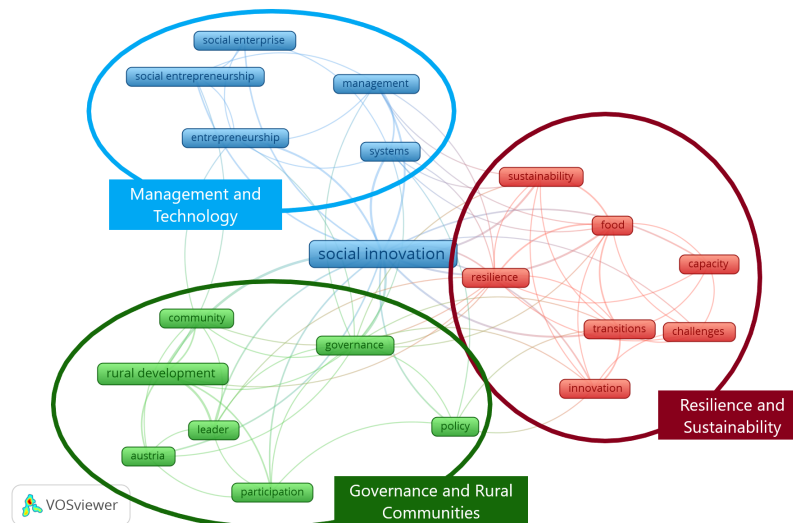


Figure 5 : Analysis of co-occurrences

Cluster 1 - Resilience and Sustainability

In this group, the words with the highest total link strength are food, being also the most emergent word, followed by resilience and transitions. The word challenges is the one that has the highest average number of citations per article, as can be seen in Table 6.

This cluster indicates in what is related to the resilience and capacity of the agents (individual or collective) to generate social change through innovative solutions to societal challenges, namely related to food, energy and the environment.

Table 6
Co-occurrence analysis - Cluster 1 (Resilience and Sustainability)

#	Keywords	Total Link Strength	Average of citations (normalized)	Publication Year (average)
1	<i>Food</i>	15	0,00	2018,67
2	<i>Resilience</i>	14	1,04	2017,33
3	<i>Transitions</i>	13	0,33	2017,00
4	<i>Sustainability</i>	11	0,52	2018,00
5	<i>Innovation</i>	9	1,38	2017,50
6	<i>Challenges</i>	6	2,00	2018,67
7	<i>Capacity</i>	6	0,88	2016,33
	Mean	8,14	0,88	2017,64

Cluster 2 - Governance and Rural Communities

In this group, the words with the highest total link strength are governance, rural development and leader. The word policy have the highest average number of citations per article. The word participation is the most emergent term, as can be seen in Table 7.

This cluster indicates that it is related to the public and governance policies related to the Leader Program, to which Social Innovation is associated with the need to participate with innovative responses from the community).

Table 7
Co-occurrence analysis - Cluster 2 (Governance and Rural Communities)

#	Keywords	Total Link Strength	Average of citations (normalized)	Publication Year (average)
1	<i>Governance</i>	18	0,41	2016,40
2	<i>rural development</i>	18	0,99	2016,20
3	<i>Leader</i>	11	1,11	2015,75
4	<i>Áustria</i>	8	1,21	2016,33
5	<i>Participation</i>	8	1,22	2017,33
6	<i>Community</i>	7	1,30	2016,33
7	<i>Policy</i>	7	1,33	2016,33
	Mean	7,71	1,08	2016,38

Cluster 3 - Management and Technology

In this group, the words with highest total link strength, besides social innovation, are systems and management, being these also the most emergent words. The term social enterprise have the highest average number of citations per article, as can be seen in Table 8.

This cluster indicates that it is related to the management and use of Information Systems and Technologies through Social Entrepreneurship, in the form of Social Enterprises.

Table 8
Co-occurrence analysis - Cluster 3 (Management and Technology)

#	Keywords	Total Link Strength	Average of citations (normalized)	Publication Year (average)
1	<i>social innovation</i>	47	0,82	2016,63
2	<i>Systems</i>	13	0,67	2017,75
3	<i>Management</i>	11	0,29	2017,75
4	<i>Entrepreneurship social</i>	9	0,49	2017,00
5	<i>entrepreneurship social</i>	6	0,13	2017,00
6	<i>enterprise</i>	5	1,13	2017,67
	MÉDIA	8,39	0,66	2017,17

Comparing Clusters

Comparing the three clusters, we can see from Table 9 that Cluster One is the most emergent theme and a strong tendency for future research. Cluster Two is the group with the highest number of citations because it is linked to an old theme (public policies) and Cluster Three have the highest link strength because it is frequently associated with Social Entrepreneurship.

Table9
Comparing Clusters

#	Keywords	Weight	Average of citations (normalized)	Publication Year (average)
1	<i>Resilience and Sustainability</i>	8,14	0,88	2017,64
2	<i>Governance and Rural Communities</i>	7,71	1,08	2016,38
3	<i>Management and Technology</i>	8,39	0,66	2017,17

4 Conclusions

From the evolution of the importance of social innovation for development we can conclude that the conceptual bases on the definitions, characteristics and benefits of social innovation have been clarified until the end of the first decade of 21st century, through several reference authors such as Mulgan, Murray, Moulaert, Pol & Ville or Cajaiba-Santana, with studies also related to social entrepreneurship, governance and sustainable development. We can also identify two approaches related to the concept of social innovation: 1) as the motor for social change; 2) as an instrument for regional development. Both can act in order to improve the satisfaction of human needs, originating new processes, new relationships and new organizations as a vehicle for solutions to social problems and improvement of quality of life.

Considering that social innovation up to the end of the first decade was addressed more in the urban context, new authors emerged with studies related to the definition and characteristics of social innovation in a rural context, such as Neumeier and Bock to identify critical success factors and emphasize the role of rural communities in the development of innovative solutions, public policies as a response for vulnerable groups, societal challenges and society collective actions, as well as the importance of social capital for rural development.

We can identify three thematic groups that allow us to contextualize the importance of social innovation: 1) Resilience and Sustainability; 2) Governance and Rural Communities; 3) Management and Technology (Social Entrepreneurship).

From these three thematic groups we can verify that the importance of communities as driving agents in responding to societal challenges, especially in the environmental area, seems to be a common point in all of them

However there seems to be a consensus about the need for more studies related to the ability and capacity of agents to identify challenges, to perceive collective well-being, build and implement solutions, create networks and contribute to the sustainability and resilience of their territory, as well as what characterizes a good environment to do social innovation and thus increase social capital in order to contribute for the repopulation of this areas.

In addition, emerging issues such as the importance of agriculture or the ICT for social innovation as a response to societal challenges, such as food and transition for sustainability in a rural context (bioeconomy and circular economy), are still little explored and are therefore opportunities for future research.

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PARALLEL SESSION 6

IMPACT OF INDUSTRY'S 4.0 TECHNOLOGIES IN THE PORTUGUESE FOOTWEAR INDUSTRY

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Extended Abstract

Abstract

The main purpose of this paper is to explore the Industry 4.0 impacts in the Portuguese footwear industry. A qualitative investigation was carried-out based on in-depth interviews with various relevant actors and experts of the Portuguese footwear cluster. The study reveals that this industry is generally well equipped and informed regarding the related technology trends. Successful examples of Industry 4.0 technologies and application were identified. Nonetheless, a lack of a skilled workforce was identified as the main constraint for effective Industry 4.0 implementation, as well as the urge for less complex technologies with increasingly less human intervention. It was also found out that investments on advanced technology are being constrained by the lack of knowledge concerning the manufacturing-specific needs and what would be the return of such investments. These findings have implications that may promote further investigation and the adoption of new Industry 4.0 related technologies in the footwear sector.

Keywords: Industry 4.0, Portuguese Footwear Industry, Portuguese footwear cluster, Industry s 4.0 technologies, Smart production.

1 Introduction

Industry 4.0 is a term often used to refer the digital transformation of industrial markets based on new management and manufacturing paradigms.

It is commonly accepted that Industry 4.0 is a collective term for the broad range of current digital technologies related to the value chain organization. This concept aims to introduce technical advances such as wireless network systems, cyber-physical systems, the Industrial Internet of Things, and cloud computing in industry (Satoglu et al, 2018).

Lu (2017) also claims that “Industry 4.0 can be summarized as an integrated, adapted, optimized, service-oriented and interoperable manufacturing process which is correlated with algorithms, big data, and high technologies” (Ślusarczyk, 2019).

1.1 The 4th Industrial Revolution

It has been widely accepted that the Industry 4.0 paradigm has had its epicentre in Germany and that it is currently recognized as the 4th Industrial Revolution. The three previous industrial revolutions of the past were all triggered by technical innovations: the introduction of water and steam-powered mechanical manufacturing at the end of the 18th century, the division of labour at the beginning of the 20th century and introduction of programmable logic controllers (PLC) for automation purposes in manufacturing in the 1970s (Schuh et al., 2015).

Since the first industrial revolution, subsequent revolutions have resulted in radical changes in manufacturing. Manufacturing processes have become increasingly complicated, automatic and sustainable, which means people can operate machines simply, efficiently and persistently. Nowadays modern manufacturing plays an essential role in the world, especially in European countries. With the technological development, the new Industry 4.0 concept was recently introduced in Germany which symbolizes the beginning of the 4th industrial revolution (Qin et al., 2016). This new industrial paradigm relates to the creation of smart factories based on Cyber-Physical Systems (CPS), which allow the creation of digital replicas of existing physical world systems, thus facilitating decentralized decision-making processes, based on the large volume of data that they can collect and treat in real time (Plinta, 2016).

Since it was first mentioned in the Hannover fair event in 2011, the Industry 4.0 term is currently one of the most popular manufacturing topics among industry and academia in the world and has also been considered as the new industrial revolution with extreme impacts on manufacturing in the future (Rojko, 2017). With the rise of this 4th industrial revolution, the paradigm of the companies has shifted and will continuously change throughout the upcoming years. These changes will affect companies and the way they produce, manage and process the different activities in the value chain (Nagy et al., 2018).

1.2 Industry's 4.0 Smart Factories

Industry 4.0 is to set up intelligent manufacturing and intelligent factory based on CPS. CPS or cyber-physical systems, are integrations of computation and physical processes, with smart manufacturing currently on the forefront.

Embedded computers and networks monitor and control the physical processes, usually with feedback loops where physical processes affect computations and vice versa (Lee, 2008).

In the manufacturing context, this means that information related to the physical shop floor and the virtual computational space are highly synchronized. In a smart factory, products find their way independently through production processes and are easily identifiable and locatable at any time, pursuing the idea of a cost-efficient, yet highly flexible and individualized mass production (Henning et al., 2013).

Jain et al., (2001) defined the Virtual Factory, which is another name for Smart Factory, as “An integrated simulation model of major subsystems in a factory that considers the factory as a whole and provides an advanced decision support capability” (Sacco et al., 2011).

In addition, Francisco & Almeida (2005), proposed the Virtual Factory Framework as a virtual advanced software environment that aims assisting the design and management of all physical factory entities including all products, manufacturing resources, and even the network of companies during all phases of the factory life-cycle. Hence, the potentials that might come along with smart factories are expected to be significant. It is important to understand that not only production processes but also the roles of employees are expected to change dramatically.

1.3 Industry 4.0 and the shift in the workforce

In today's global environment, sustainability and competitive advantage of companies depend mostly on their capability of adaptation to changing business requirements. The Fourth Industrial Revolution, has been profoundly changing dynamics of most industries. Automation of business processes together with emergence of novel business models impose new digital skill requirements for workforce.

In order to meet these new requirements, companies will have to focus their strengths, not only in attracting and developing new talent, but also re-skilling current employees through training programs as well as re-designing work processes for reducing the skill mismatch between jobs and employees (Karacay, 2018). As automation and digitalization of work processes increase, workers will be required to take charge of less automatable and more complex tasks, whose completion necessitate solid literacy, numeracy, problem-solving, and ICT skills together with soft skills of autonomy, co-ordination and collaboration.

Overall, there will be higher demand placed on all members of the workforce in terms of managing complexity, problem-solving and higher levels of abstraction for obtaining simplified representation of the bigger wholes (Satoglu et al., 2018). Having these changes in consideration, producers must set priorities and upgrade the workforce, which means, analyze the long-term impact on the workforce and conduct strategic workforce planning. Additionally, they have to adapt roles, recruiting, and vocational training to prepare the workforce with the additional IT skills that will be required (Rüßmann et al., 2015).

2 The Footwear Industry

One of the most profitable markets in the world is the fashion and lifestyle industry and it is defined to be a billion-dollar industry employing millions of professionals all around the world.

Fashion industries are one of the most dynamic supply chains in the world and due to this nature, there are new challenges and many opportunities presented. Moreover, the footwear industry is part of the fashion industry and will be the focus of this study.

2.1 Challenges and opportunities for the Portuguese Footwear Industry

Based on the collected data, is possible to realize that the current situation in Europe is not favorable and that the market demands are more difficult to deal with and also more heterogeneous, which puts the Portuguese manufacturers in an unfavorable position (APICCAPS, 2013). In order to respond to the new demands of the clients and also, be able to compete with emerging producers based in Asia and Africa, Portuguese manufacturers will have to invest in new technologies and innovation in order to become more flexible, more efficient and have a quicker response capacity.

In the last few decades, the Portuguese footwear industry has undergone rapid and intensive transformation. Footwear companies braced the challenge to modernize their facilities and production methods, also investing in the less tangible aspects that gave them a competitive edge. Nowadays, Portuguese companies are known worldwide not only for the quality of their work, but also for the excellence of their service, the ability to deliver small series, always based on a quick response to the market needs and requirements.

Having this in mind, the Portuguese shoe industry is already taking the steps in order to become more competitive in this new technological era. Some examples of this new wave of startup companies, that are taking advantage of the new technologies that are embedded in the Industry 4.0, are the ones that use the App and photos in order to build a 3D model of the person's feet in order to better advise the customer in which shoe fits better; other example is a Portuguese company that is making custom shoes for brides. It is possible to find companies that use the online store to sell totally customized shoes, where the client is able to choose every aspect of the shoe, from the material, color and shape.

2.2 Understanding the impacts of Industry 4.0 in the Portuguese Footwear industry

It has been realized that Industry 4.0 is an extremely broad topic, that encompasses different departments and activities in a company. In this study, the focus is to analyse the effect that this revolution is having in the Portuguese footwear cluster and also at the factory level. Thus, the main goal is to understand what are the impacts of Industry's 4.0 technologies in the Portuguese footwear industry.

In order to answer to the above research question, it was imperative to design the objectives that would lead the research. The first objective was to evaluate the degree of knowledge that the Portuguese manufacturers have in regards to Industry 4.0, in order to have a clearer notion of the dissemination of this topic among the Portuguese manufacturers. The following objective was to analyse the degree of digitization of the Portuguese footwear industry according to the inputs given by the producers interviewed.

After analysing the previous topics, it was important to evaluate the implementation of Industry's 4.0 technologies in the Portuguese footwear industry. The fourth and fifth objectives were focused on the benefits and challenges that come with this revolution in order to have a more accurate idea of the major pros and cons that the producers deal with in their day-to-day operations.

The two final research objectives of this study were to identify the main drivers for the implementation of these technologies in the footwear sector and finally evaluate the impacts that the implementation of Industry's 4.0 technologies might bring to the company's workforce.

3 Methodology

In order to lay the foundations for the study, a dedicated literature review was carried-out, followed by a qualitative investigation of exploratory nature. Twelve in-depth interviews with various relevant actors of the Portuguese footwear scene were performed and analyzed. The fundamental basis of this study is based on personal opinions which are constructed having in consideration the academic and scientific state of the art and the application of the different study tools. These interviews were conducted with internal and external informants. Internal informants included top and middle managers that were listened to with the aim of getting acquainted with the firms' history, culture, strategy and the way they perceive and react to environmental changes. These interviews were complemented with extensive talks with external informants such as industry experts. The role of these experts was critical in two key stages of the research: the design of the questionnaire and the interpretation of some results.

Interviews administered to the top managers of the firms, together with those that were conducted in the Footwear Technological Center (CTCP) and to two directors of APPICAPS (Portuguese Footwear, Components, Leather Goods Manufacturers' Association), allowed the understanding of the circumstances under which innovations are being adopted and the main types of innovations introduced over the period of analysis. Additionally, the interaction with the experts facilitated the contact with the firms.

Direct observation took place throughout the visits to a sample of firms. These visits, which had an average duration of one hour, allowed the observation of behaviors displayed by managers, designers and production workers in the shop floor. In some cases, some participant observation was conducted while working alongside the production workers and gaining in-depth understanding of the activities involved in the production process. All interviews were conducted face-to-face, with the exception of one, that was carried-out over the phone.

4 Results and Discussion

When analyzing the degree of knowledge that Portuguese manufacturers have in regards to Industry 4.0, it is possible to conclude that the producers are well informed regarding new technologies that are already being used in the industry and also new technologies that are being released. Concerning the degree of digitization of the footwear industry, these manufacturers believe that the industry has already some tools that allow for the automation of some processes. Nonetheless, all interviewees refer that the Footwear Industry is a sector that is still very dependent on human labor and that nowadays the related technologies have not evolved enough in order to allow full process automation scenarios. The interviewees also stated that currently it is not easy to effectively implement the Industry 4.0 paradigm in current work scenarios as, according to Zhou et al. (2016), it is likely to take ten or more years to realize it. Concerning such implementation of Industry's 4.0 technologies in the Portuguese footwear industry, it is possible to notice that the technologies with the highest degree of implementation are the automatic cutting machines.

Regarding the benefits that arise from the implementation of Industry's 4.0 technologies, it is important to conclude that the most recurrently mentioned was the fact that the automation of processes allows a lower degree of dependency on human labor. Also, improvements regarding flexibility of processes, especially due to the automatic cutting machines, faster production and more efficiency were also very common topics in the answers of the interviewees. On the other hand, observing the present overall setting, the main challenges identified were the lack of skilled human labor to work with these new technologies and machines. As for the main drivers for the implementation of industry's 4.0 technologies, it is important to conclude that the main ones are the training of the employees in order for them to keep up with the technological advances and also government support through the applied fiscal policy, enabling a lighter tax burden.

Concerning the implications in the workforce, it is possible to conclude that most of the interviewees do not believe that the implementation of these technologies will cause drastic job losses. The common belief is that, there are some more routine tasks that are already automatized, with the tendency of more tasks to following this route.

Finally, when asked about the intention of investing in new industry 4.0 related technologies in the future, seven out of ten of the manufacturers claim that they have the intention to invest either in machinery, improving their management system or selecting technologies that allow for better communications and interactions with their customers, increasingly less human intervention.

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PARALLEL SESSION 7

INNOVATION, TRANSPARENCY AND DECISION MAKING: A CASE STUDY OF MUNICIPALITIES WITH IMPACT PARTNERSHIPS

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Extended Abstract

Abstract

Innovation is an incipient issue when associated with the public sector. As transparency is an essential factor that reduces the information asymmetries between politicians and citizens, the interest arises in perceiving how innovation influences transparency and decision making. Given the greater proximity between citizens and politicians at the level of local power, it was stipulated the application of this study to 50 Portuguese Municipalities that count on the support of Portugal Inovação Social, since they are considered as the most innovative. In this sense, it is sought to verify if these local autarchies present greater levels of transparency and if the adoption of innovative projects contributes to improve the decision-making process. The purpose of this article is to focus on the seminal literature that will constitute the theoretical framework as a way of contextualizing and relating fundamental concepts of the area under study. The literature review allowed us to identify three theories of research support that we intend to develop in the future.

Keywords: Innovation; Municipalities; Transparency; Accountability.

1 Introduction

The success of innovation practices results from interactions that can't be achieved in isolated situations (Mention, 2011). Keeble and Wilkinson (1999) argue that learning from external sources is critical to sustaining the success of an innovative environment. This learning process presents strong local, cultural and institutionally defined contours.

Studies by Gallouj (2002) have shown that the services sector accounts for about 70% of employment and GDP in most developed countries. However, there was a view of public services as being less innovative, unable to implement their own innovation practices, using practices used by the private sector. In order to improve this perspective, studies have been carried out on innovative practices in public services, more precisely in the Portuguese Municipalities.

Nowadays, the Municipalities play a fundamental role in the construction and development of modern democracies, since, in addition to being strongly influenced by external factors, their main objective is to respond to the different interests of citizens, thereby achieving their own objectives. In this sense, the interest for a more specific study of the Municipalities arises since there is a greater proximity with the citizens, allowing to understand what the interests of these stakeholders, their needs and opinions regarding the work developed by the local public administration.

According to Freitas, Nogueira and Ribeiro (2016) the concern about the transparency of the local administration's management towards the citizens has been strongly influenced in the last years by the decentralization of competences in the local governments and by the independence that they enjoy with the central government. This decentralization leads the local authorities to pay more attention to the management of public funds. Transparency in innovation practices and the dissemination of information on activities has been understood as a challenge to the strategic values of Portuguese municipalities and to the satisfaction of stakeholders' objectives. Since innovation practices are often overlooked and undervalued, in spite of their realization, they often limit the residents' knowledge of how to fulfill their mission.

Internationally, good communication practices include the acknowledged emphasis of innovation practices on the various platforms used for disclosure and undergoing full disclosure compliance that brings stakeholders closer to the organization. Institutional disclosure should be understood as the main information vehicle for society in order to allow the comparability of innovation practices, their improvement and redefinition for decision making.

Thus, the main objectives of the present research are: (i) to understand which innovative practices/projects are implemented by the large Portuguese municipalities and the weight/role in the annual program of the Municipality; (ii) analyze how they are communicated to Portuguese citizens as key stakeholders; (iii) perceive the importance of innovation in the context of the local public and political sector.

Although innovation practices are well researched when implemented in organizations, this topic is still little explored in the public sector (Camacho & Rodríguez, 2005). In companies, according to the sector in which they are inserted, defined goals to be reached that depend on the operation of the same and a certain group of customers. In the case of Municipalities, citizens are the stakeholders, that is, they are the individuals that can affect or be affected by the achievement of the organizational objectives (Braga & Carvalho, 2010). There is still a very small number of studies on the factors that contribute to transparency and decision-making at local government level.

In the present research, the introduction is followed by an approach to the basic concepts of public administration, transparency and accountability, as well as the main theories that sustain innovation in the public sector. Section 3 describes the research methodology to be applied later. Finally, it was decided to study the Municipalities with the support of Portugal Inovação Social, in order to understand if those that are more innovative are more transparent and the decision-making process is facilitated.

2 Literature Review

2.1 Public Administration

There is a complex reality when analyzing the public sector as it forms the basis of the society in which we live and designs its development structure.

In developed countries, the public sector accounts for about half of all economic activity (Potts, 2009) and has a cluster of diversified characteristics that allow it to differentiate itself from the private sector. In detail, these two sectors have opposite objectives, since the public sector does not aim at maximizing profits and intends to contribute to the well-being of citizens by providing services that are generally of a "free" nature, with a return through the payment of taxes. As far as competition is concerned, there are some contradictory opinions, because it is argued that in the public sector it is something that happens on a case-by-case basis as it is not intended to win customers, which is a private sector initiative. However, the achievement of the trust of citizens, key stakeholders, is essential for the proper functioning of this sector. Thus, it is essential that service delivery excellence be achieved, as this sector fulfills its social and political responsibilities in the community to meet the demands and needs of citizens (Kelman, 2005).

In the public sector, there are difficulties in establishing methods that allow an evaluation of their performance, which is difficult in the private sector since the latter has fewer variables interfering with its operation and usually goes to specific markets. The public sector is headed for a "general" market. In order to facilitate the evaluation of the sector under study, Djellal and Gallouj (2015) point out that three types of organizational structures can be identified: public services (education, healthcare, waste, basic sanitation, etc.) public enterprises at national or local level, and public administration (national or local). In this sense, arise the local authorities (local public administration), which, according to article 235 of the Constitution of the Portuguese Republic (CRP), are territorial collective entities with representative bodies, which aim at the pursuit of the interests of the respective populations. Their proximity to citizens enables them to more efficiently and efficiently meet their needs, which justifies the choice of the study of local authorities.

Local authorities comprise parishes and municipalities, and the latter will serve as a basis for research. According to Carvalho, Fernandes and Camões (2018), municipalities are legally defined as local authorities aiming at the pursuit of the interests of the population residing in the county constituency through elected representative bodies and, over time, have achieved a high historical, political, economic, administrative, financial and legal, and is of paramount importance in the context of local public policies. Portugal consists of 308 municipalities, of which 278 belong to the continent, 19 to the autonomous region of the Azores and 11 to the autonomous region of Madeira (INE, 2018).

2.2 Innovation in the public sector

Innovation is known as one of the main engines of economic growth (Mention, 2011) that allows companies to develop and support competitive advantages, ensuring their continuity and sustainability (Porter, 1998). It can't be characterized only by the existence of a new idea, but by the implementation of a new practice and may include the reinvention or adaptation of practices to different contexts, places or time periods (Hartley, 2005). According to Moore et al., (1997), changes that must be recognized as innovation must be new to the organization, large enough, general and sustainable in a way that significantly affects the operations or character of the organization. According to Gobara et al., (2010) innovation plays a prominent role in the business economy due to the high degree of competitiveness among organizations. Despite being a concept initially defined for the industrial sector, it has been developing and being studied in the public sector. Evangelista (2006) argues that it is the high degree of heterogeneity, characteristic of the sector under study, that leads to the adoption of innovative behaviours, since it is necessary to solve problems from the most diverse areas. The implementation of innovative practices provides opportunities to increase the efficiency and quality of the service delivery process and at the same time facilitates the introduction of new services concepts (Aa & Elfring, 2002).

However, not all authors agree on the innovation in the public sector and argue that it has been an element outside the organization, ie, an element of support, regulation and incentive to innovation of companies and not as promoter of innovation. Potts (2009) argues that the innovation process requires experience and a high level of tolerance of institutions to take risks and failures. However, the search for efficiency involves exactly the opposite, that is, risk aversion, intolerance to experimental activities, and preference for processes whose results are already known. These evidences justify the fact that, in the public sector, there are still no theories developed as a way of explaining innovative practices used only in public administration.

In their study, Escauriaza et al. (2001) refer that there is increasing evidence that the public sector plays an important role in the implementation of innovative practices, although this sector presents specific characteristics that are not observed in the private sector. However, Barras (1986) says that it is through the private sector that the public sector can implement innovative practices, since it follows some of the models that these developed and that have obtained good results to seek to evolve. Hipp and Grupp (2005) defend that the existence of well-defined innovation practices in the private sector is not enough to enable them to be implemented in the sector under study, since it is not possible to guarantee the same results utilizing that theories, concepts and management the private sector. This is due to the fact there is a significant influence of external variables that imply to adaptation possible treatments to fit different solutions.

It is understood that the Contingency Theory is of the most important when applied to the public sector, given that, according to Gupta et al., (1994) environmental conditions provoke transformations within the organizations. According to Chiavenato (2003), the contingency refers to something uncertain and, following this perspective, it is not possible to obtain efficacy following a predefined model. That is to say, as it is preponderant in the public sector to respond and represent diverse interests, it is not possible to have as base only a single model, since this one does not suit all situations. It is up to each municipality to develop innovative and possible practices to apply in different contexts. These facts justify the evidences, defended by Escauriaza et al. (2001) and Hipp and Grupp (2005). Carvalho, Gomes, and Fernandes (2012) state that although contingency theory and institutional theory are seen as rival theories, there are authors who recognize the existence of a connection between them. Concerning the contingency theory, it is seen that it is more oriented to the internal structure of the organization and regards changes as a result of external/environmental influences. On the other hand, institutional theory focuses on the external environment and stresses that rational practices also influence decision making. The two theories can best be understood when used as complementary, since institutional arguments do not need to be formulated in opposition to the rational arguments of efficiency (Carvalho et al., 2012, Gupta et al., 1994, Scott, 1987; Nogueira & Jorge, 2016).

According to Gupta et al. (1994) Institutional Theory argues that organizations should follow social norms, since their survival depends on the support of external constituents, being this reasoning applies to governmental organizations. In this sector it is possible to recognize the existence of a conflict between the conformity of normally institutionalized procedures and the criteria of efficiency, since the survival of these organizations depends first on their legitimacy and later their real performance (Gupta et al., 1994). In this sense, Gomes, Fernandes and Carvalho (2017) point out that the institutional pressures, exerted to adopt a mandatory system are fundamental since organizations depend on the support of the external parties involved and not on their effective performance. In their research, they reference performance management and pointed out that in the public administration, several institutionalists emphasized this practice as a means of maintaining legitimacy and obtaining external support, because they are organizations dependent on institutional and legal pressures. They also affirm that organizations have different responses to deal with external constraints and institutional pressures, and the degree of resistance to change will depend on the objectives of the demand and the expectations to be exercised (Gomes et al., 2017).

According to institutional theory, it is important to emphasize the concept of isomorphism. It is a restrictive process that forces one unit in a population to compare with other units that are affected by the same external variables as a way of achieving uniformity in relation to the institutional environment (DiMaggio & Powell, 1983). This process allows organizations to adapt methods of action that enable them to respond and defend the interests of stakeholders in response to institutional pressures, contributing to the decision-making process taking into account the external variables that influence it. In this way, decision making can happen based on the adoption of a certain practice (coercive isomorphism), imitating successful practices of other organizations (mimetic isomorphism) or implemented practices recommended by professional organizations with the power to influence their behavior (normative isomorphism) (Carvalho et al., 2012; Nogueira & Jorge, 2016). In the specific case of Municipalities, the fact that they exist in large numbers allows us to analyze those that are most innovative, how they disseminate information, the mechanisms they adopt to overcome potential barriers in the decision-making process, and what external factors influence them. In this way, it is possible that some serve as examples so that others define new practices, more adjusted to the environment in which they are inserted.

In addition to the mentioned theories, the existence in the literature of the Theory of Innovation applied to services is revealed, essentially developed through the study of factors that influence the implementation of innovative practices in different countries. Gallouj and Weinstein (1997) argue that the theory of innovation was essentially developed based on an analysis of technological innovation in industrial activities, which is in keeping with Schumpeter's studies. On the other hand, they argue that the services sector has specific properties that make it difficult to measure productivity and to investigate possible improvements or changes. According to Lima & Vargas (2012) and Gobara et al. (2010), this theory consists of three approaches: technological, service-based and integrator. In this sense, it is understood the technological approach as a result of the adoption of technologies developed by the industrial sector. Its introduction in the services sector would not cause a radical impact nor would it allow the achievement of extraordinary profits. However, their contribution to increasing efficiency in service delivery would be notorious (Barras, 1986, Gobara et al., 2010, Lima & Vargas, 2012, Vargas & Zawislak, 2006).

According to Gallouj (2002), there are beliefs about the public sector that affect the study of innovation and, consequently, the introduction of new technologies, this being attributed to the image of a sector with a low level of productivity, reduced intensity in the application of capital and possessing low-skilled human resources. Moreover, the specificities that this sector presents do not allow it to be studied in the same terms as other sectors. As regards to the services-based approach, it is possible to highlight particularities of innovation in services. Hauknes (1998) suggests that in this approach is the relationship between the parties, in this case between the Municipality and the citizen, which provides opportunities for innovation. Gallouj (2002) argues that this approach allows the development of local theories, applicable to specific activities of the sector due to their diversity. In this sense, the author identifies different innovation modalities (Table 1) from which ad hoc innovation can be emphasized. These arise from the iteration between client and service provider and can be defined as the formulation of strategies that aim to solve constraints identified by clients (Gallouj, 2002; Sundbo & Gallouj, 1998). Although commonly applied to the business context, this modality is easily transposed to the relationship between the Municipality and the citizen.

Finally, in the integrative approach, several authors propose to agglomerate the two previously mentioned approaches, enabling the development of a theory of innovation that deals with goods and services, allowing amplification of the concept of innovation (Gobara et al., 2010; Lima & Vargas, 2012).

Table 1: Modalities of the innovation process. (Source: Authors based on Gallouj and Weinstein (1997) and Vargas and Zawislak (2006)).

Radical Innovation	Creation of a new set of characteristics that allows the development of a new product.
Improvement Innovation	Change in the quality of certain components of the products, without altering the structure of the rest.
Incremental Innovation	Improvement of the final characteristics of the product, through the introduction of new components.
Innovation by Recombination	The characteristics of products / services are combined or decoupled as a way of creating a product / service.
Innovation by formalization	Ordering of product characteristics, making them more visible and standardized.
Ad Hoc Innovation	Elaboration of a solution to a problem posed by the client.

2.3 Accountability and Transparency: agency problems

According to Jensen and Meckling (1976) organizations should be understood as a network of contracts that establish the rights and duties of stakeholders. In these contractual relationships there is one or more persons (the principal) who hire others (the agent) with the intention to delegate decision-making power as a means to achieve the established objective. In this sense, the problems of agency, which in addition to being verified in the business sector, have been studied in different contexts, more specifically in representative democracy (Ferejohn, 1986). In the public sector, voters (citizens), who do not have the power to achieve their goals, elect politicians/rulers (agents) through vote, with the aim that they defend and respond to their interests, hoping that governments will maintain a responsible position regarding the management of the public assets entrusted to them. Thus, there is a relationship of mutual dependence between the parties. Citizens have needs to which the Municipality has a chance to respond and the way how the latter solves the problems enables the citizen to evaluate the performance of the rulers, allowing them to continue to represent the Municipality.

However, there is not always a good relationship between the parties, because the rulers have their own interests and their implementation can disadvantage voters by promoting a conflict of interests. The balance between the agent and the principal in the sector under study lies in the entities' ability to be more transparent (Ferejohn, 1999), because the transparency of the information disclosed allows to improve the relationship between the municipality and the citizen (Caba Pérez, López Hernández, & Rodríguez Bolívar, 2005).

There are different concepts of transparency, according to Kaufmann and Kraay (2002) transparency is characterized as a timely flow of economic, social and political information accessible to relevant stakeholders. Governments that are more transparent can obtain a greater number of competitive advantages, as better-informed citizens have a greater capacity to hold their governments accountable (Romzek & Dubnick, 1987). Transparency allows the reduction of asymmetries of information between the State and citizens, contributes to a more rigorous control of public performance, since it allows society to evaluate it and reduces the inefficiencies of public management (Stiglitz, 1999). Thus, transparency makes it possible to improve the decision-making process, making it an incentive for citizens to exercise their right and the duty to vote (Bastida & Benito, 2007; Benito & Bastida, 2009).

Bauhr and Grimes (2017) suggest that to ensure transparency, there are three requirements: (1) to make public information on relevant laws, regulations and other policies; (2) notify interested parties (for example, of possible changes); (3) ensure that laws and regulations are administered impartially. The same authors emphasize that the information disclosed should be visible, in the sense of being complete and easily accessible, thus allowing accurate conclusions to be drawn.

The State takes responsibility for its actions towards the citizens, this because it defines rules and regulations to be fulfilled and provides public goods and services. Its legitimacy depends on the public opinion resulting from the debate of ideas and political opinions in society. For this public opinion to be formed, Arnold and Garcia (2011) stress the importance of accountability, since it can be considered as a method of evaluation and accountability of public entities allowing citizens to control the practice of power granted (Rocha, 2011).

Accountability is considered to be a fundamental element of good governance, since it is about assignment of responsibility for decision-making, with the aim of avoiding abuse of power or other inappropriate behaviour (Cameron, 2004). Carvalho et al. (2010, p.25) consider accountability not only in an accounting perspective, but also in the management and implementation of established programs and predefined and approved activities. From these authors' point of view, is the responsibility attributed to the executive bodies for a sound management of public money (allocation of resources with the objective of efficiency and redistribution of income and wealth for better social justice) and by disseminating the methods they put into practice for the use of public resources made available.

Rocha (2011) argues that accountability covers disclosure of information, both with the internal environment and with the external environment. In this way, it is necessary to implement control mechanisms that guarantee transparency. From the perspective of this author, there is a lack of accountability due to the fact public management to be conducted by many as a company and not as a democracy. It is at this point that the local public administration must evolve in the implementation of innovative practices that allow to serve the citizens and that look for the public interest valuing the citizenship. Windrum and Koch (2008) point out that, of the particular characteristics that the public sector presents, social responsibility and accountability when combined with the different specific networks of this sector give rise to a cluster of barriers and determinants of innovation.

Citizens are the main users of the financial information available that serves to perceive the affectation of the resources by the Municipalities and allows to evaluate the performance of its representatives. As they are the main consumers of the public goods and services provided, they can be considered as the financiers of public sector activities. Key stakeholders require that, in addition to the dissemination of information, she is accessible, reliable, relevant and easy to understand. These statements can be corroborated by the study developed by Armstrong (2005) in which the UN countries identified the concepts of integrity, transparency and accountability as founding principles of public administration.

3 Research Methodologies

According to information provided by the Innovation Barometer (COTEC, 2019) organizational culture represents one of the greatest drivers of innovation for any company, and this is identified as a successful practice. To this practice are associated some benefits, such as: i) teams more united and focused; ii) greater transparency in communicating the objectives to be achieved; and (iii) increasing increases in the return on investment in innovation. Although this platform provides information for the business sector, one can easily see that the same is happening in the public sector.

Taking into account the aspects discussed above, it is intended to carry out a quantitative and qualitative content analysis in the multiple case study of the Municipalities. The research will focus on 50 Portuguese municipalities out of a total of 278 that belong to the continent. For the definition of the sample data were considered available by Portugal Social Innovation in March 2019, within the framework of the financing instrument "Partnerships for Impact" that this national public initiative maintains with the Municipalities. This instrument aims to support initiatives of Entrepreneurship and Social Innovation (IIES) that want to implement a development plan, in order to achieve greater scale and impact. The defined Municipalities stand out from the others by the volume of investment they present, which leads us to suppose that these are also the ones that most innovative practices implement. The study by Araujo and Tejedo-Romero (2016) allowed them to obtain data showing that higher levels of investment correspond to higher levels of municipal transparency.

A multiple case study, based on documental analysis, is based on information provided by each municipality, using ANAFRE and / or ANMP. In a first phase it is fundamental to realize if all the Municipalities have a page in the Internet with the intention of transmitting information to the stakeholders and that allows us to develop the investigation. In this way, we intend to evaluate the quality of the information that each municipality has, to see if they use the aspects that highlight them as more innovative and in what way they are more transparent. Another relevant aspect for the study concerns the external variables that may influence the innovative behaviour of each municipality. For this study, it is fundamental to define the variables related to innovation and transparency, to analyze the sites according to them and, in the end, it is foreseen the use of a multiple linear regression that shows if there is a statistical relation between the defined variables.

Some indexes that aim to measure Municipal transparency will be taken into account in this study. Through the indices assigned to each municipality in the Northern Region and the information available to each one of them, it may be possible to highlight the aspects that distinguish them from the others, and thus to arrive at innovative practices that make them more transparent.

4 Conclusions

Innovation allows organizations to stand out from the others and achieve higher levels of success, but the implementation of innovation policies depends on the sector in which the organizations are inserted and the external factors that influence them. In the public sector, studies on the adoption of innovation policies are incipient, which may be due to the high degree of heterogeneity of the services that comprise it. The fact that there are interests of different stakeholders, to whom it is necessary to respond, means that the methods and practices implemented must be adapted to the specificities of each one. In this sense, considering the proximity between politicians and citizens in local authorities, it is important to understand how the objectives established in the electoral program are achieved and how to ensure the citizens' trust. Thus, this study intends to contribute, through the analysis of innovative practices by the Municipalities, to a greater and more transparent dissemination of the information.

This research is supported by three theories associated to the public sector, which allow a better understanding regarding the implementation of innovation practices. The theory of contingency explains the fact that the entities under study are influenced by external factors and can't develop only one model that applies to all situations. This theory is often compared to institutional theory, since the latter argues that the survival of government organizations depends on the support of external constituents. Finally, an approach to the theory of innovation was made, since it brings together the three pillars of innovation in the public sector.

With this theoretical framework, it was possible to perceive that, in order to develop effective innovation practices, it is essential that municipalities disseminate information that is easy to access and understand. As a result, citizens are better informed about the public management that is carried out to satisfy and represent their interests. Transparency and accountability are essential for citizens as it is a way of assessing the performance of their political representatives. With well-informed citizens, the representatives of each municipality can see if they are doing the right thing and understand more easily what are the aspects of society that deserve more attention. A good understanding between the parties allows the development of innovative practices adapted to the environment in which they are inserted and that respond to the interests of the stakeholders.

In this way, it was decided to study the innovation of the services provided by the Municipalities in partnership with "Portugal Social Innovation", in order to understand if these local autarchies. Taking into account the above-mentioned methodology, a quantitative and qualitative study is needed to verify if the Municipalities with the highest levels of investment are the most innovative and if, being more innovative, they are more transparent. Another fundamental aspect of the study is to see if, because they are more innovative, they have more facilities in the decision-making process. In this sense, it is expected that this article contributes to the enrichment of the literature and, in the future, will enable the Municipalities to implement innovative practices that give them transparency and rigor in decision making.

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PARALLEL SESSION 7

THE CREATION OF AN ENTREPRENEURIAL ECOSYSTEM IN A RURAL TERRITORY

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Extended Abstract

Abstract

This study aims to analyse the importance of entrepreneurship programs in rural areas. For the empirical development of this study, primary data was collected through qualitative methods (interviews). Interviews were applied to staff members of the institutions involved in the development of the EMER-n program. Our results show that the EMER-n program allowed the involvement of the regional actors (higher education institutions, business associations and local development associations) in the creation of an entrepreneurial ecosystem in a rural territory, providing support for the creation of new firms and the development of firms already operating in the territory. This study provides empirical evidence on the importance of entrepreneurship programs in supporting rural enterprises. In addition, it aims to demonstrate how interaction with regional stakeholders can help fostering rural businesses and contribute to an entrepreneurial ecosystem.

Keywords: Entrepreneurship Program, Rural Environment, Territory, Stakeholders, Entrepreneurial Ecosystem, Creation of company, Regional development.

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1 Introduction

Entrepreneurship is increasingly acknowledged as a catalyst of employment and innovation and is thus a key driver of economic growth (e.g., Acs, Desai, & Hessels, 2008; Bosma & Levie, 2010). This is even more evident when one looks at rural areas where the lack of employment is more evident than in urban areas (Faggio & Silva, 2014). Indeed, it is common ground that job creation and economic development, both in urban and rural areas, are highly dependent on entrepreneurship (Minniti, 2008; Friedman, 2011; Ihugba, et al., 2014).

In general, rural regions represent about 75% of the territory and almost a quarter of the population in the OECD countries (OECD, 2006). Considering the European Union (EU), rural regions cover 57% of the territory and 24% of the population (CE, 2012). These regions face significant challenges compared to other regions (Brown & Schafft, 2011), that are even more critical in the so-called peripheral or mountainous regions. For these regions, the problems usually result from a rapid decline in employment in the previously dominant agricultural sector (Terluin, 2003), a poor socio-economic environment, low population density, population aging and long distances from markets and services (OECD, 2006).

Firms, especially those in rural areas, are in constant competitive and productivity challenge, and it is imperative to create an environment that ensures productive and business modernization. In this context, it is essential to promote the creation of "support networks" between the private sector, the different spheres of the public administration and other regional and local social players, to ensure the productive and business modernization of the interior regions, and subsequently, business decentralization. In fact, previous research has demonstrated a positive relationship between entrepreneurship and some indicators of local development in rural areas (Baumgartner et al., 2013). Based on the entrepreneurial ecosystem, this study's main objective is to analyse the importance of entrepreneurship programs in rural territories. For this purpose, an entrepreneurship program (EMER-n) was considered and its impact on the development of northern Portugal rural areas.

2 Literature Review

Although research on rural entrepreneurship has traditionally focused on the farmer (Moyes, 2010), the notion of "rural entrepreneurship" is not limited to agriculture and related activities, covering a myriad of other activities, including industrial activities (Miljkovic et al., 2010). Korsgaard et al. (2015) distinguished between two types of entrepreneurship in rural areas: rural entrepreneurship and entrepreneurship in rural areas. While the former is based on the creation of wealth from natural resources, the second the spatial context is a possible place, among others, to develop the business and gain economic profits. As regards rural areas, territories with specific physical, social and economic characteristics (Stathopoulou et al., 2004, Siemens, 2014) call for policies to support entrepreneurship, a key element in the rural development process, especially in the most remote areas (Lafuente et al., 2007). In fact, entrepreneurship, such as the creation of business or the modernization and expansion of existing ones, had become a key topic in rural development (Baumgartner et al., 2013). Most entrepreneurs in rural areas often do so because they have no better options. These individuals are known as necessity-oriented entrepreneurs. In contrast, others become entrepreneurs because they find opportunities in the market and want to use those opportunities in advance (Sohns & Diez, 2017; Gindling & Newhouse, 2012). The rural entrepreneur is someone who lives in a rural area (Stathopoulou et al., 2004) and in which his business philosophy mirrors his rural lifestyle and with the slower pace characteristic of these areas (Smith, 2008).

Governments have been introducing and financing Entrepreneurship Programs as a policy tool to foster innovation, create new businesses and improve the economic development of regions (Gangi, 2017; Cheung, 2008). However, it is essential to create an entrepreneurial ecosystem that supports and sustainably develops new and existing enterprises (Galvão et al., 2019).

The concept of entrepreneurial ecosystem arose from the study of Moore (1993), with the purpose of explaining to the economic communities the creation of innovative value. These ecosystems are grouped together by their interdependent actors who share a vision of value creation and who work in a network or organization to promote innovation and productive entrepreneurship within a particular territory (Dif, et al., 2018; Moore, 1993). According to Mazzarol (2014), an entrepreneurial ecosystem is a model or strategy that nourishes economic development in order to promote entrepreneurship, small business growth and innovation.

3. Methodology

3.1. Characterization of the "EMER-n"

The EMER-n program counts on the partnership of two Business Associations (InCubo, Instituto Empresarial do Tâmega), three Higher Education Institutions (University of Trás-os-Montes e Alto Douro, Polytechnic Institute of Viana do Castelo and Polytechnic Institute of Bragança) and ten Local Development Associations (Ader-Sousa, ADRAT, ADRITEM, ADRIMAG, CORANE, ATAHCA, ADRIMINHO, DESTEUQUE, DOLMEN e Douro Superior) distributed throughout the region.

The EMER-n program was designed to support entrepreneurs who have an idea, more or less developed, and who want to transform it into a business, as entrepreneurs who have a created micro or small business and who need support to give new impulses to the your business needs at innovation, modernization and / or competitiveness levels. Thus the main objective of this program is to develop and implement an instrument or tool to leverage micro and small businesses, adapting the constraints and particularities of the rural environment. In addition, it aims to create a positive environment, supporting the emergence and growth of firms and employment in north Portugal, through the following stages:

- 1st Stage: Receipt of registration via platform and first validation;
- 2nd Stage: Meeting with entrepreneurs for a first validation of the needs;
- 3rd Stage: Signing an acceptance letter;
- 4th Stage: Elaboration of a diagnostic sheet;

5th Stage: Intervention and Follow-up of the schedule.

3.2 Type of Study and Analysis of Information

For the development of this study, a qualitative approach was chosen both through interviews with institutions directly involved in the program (Table 1) and through an analysis of content of reports and documents developed throughout the program.

Finally, all the information gathered (Documents and Interviews) were submitted to a content analysis. Through the organization of sources and data coding with the NVIVO 11.0 software, it was possible to extract useful and segmented information, which resulted in the creation of tree nodes, which label and branch out the collected information. In cases where the information was very dispersed in its content or lacking enough elements to capture patterns, and due to coding difficulties, word cloud analysis were used.

Table 1. Characteristics of interviewers

	Genre	Job Role	Academic qualifications	Type of Institution
Interviewee 1	Male	Responsible for the Incubator	MBA	Institution of Higher Education
Interviewee 2	Female	Technician	Master in Management	
Interviewee 3	Female	Project Director	Postgraduate in entrepreneurship	Business Associations
Interviewee 4	Male	Coordinator	Master in Management	
Interviewee 5	Female	Coordinator	Degree in Civil Eng.	Local Development Associations
Interviewee 6	Female	Technician	Bachelor	

4. Results

According to Brown and Schafft (2011), rural territories have a greater need for support for entrepreneurship and specialized services, since such territories are characterized by low population density and weak business dynamics. In this sense, and in order to foster the creation of new firms and support the existing ones and their competitiveness, the EMER-n Program was developed to offer a set of supports, such as: i) Mentorship and ongoing monitoring by skilled professionals with proven experience; ii) definition of a personalized intervention plan for each promoter; iii) specialist consultancy by researchers from higher education institutions partners and contracted specialists; iv) access to specific promotion and dissemination actions; v) integration into a regional business network; vi) access to own financing options.

From those types of support offered by the EMER-N Program, a set of them were most requested by the entrepreneurs who resorted to the program (Table 2).

The 10 main supports presented in Table 2 represent approximately 86% of the support requested by the entrepreneurs (see example column) that used the EMER-n Program. However the funding support, development of the business plan and the promotion of business, accounting for over 50% of the needs identified by entrepreneurs.

Table 2. TOP 10 of the main support provided by the EMER-n Program

Main support provided by EMER-n	Entrepreneurs		Examples
	No.	%	
Financing / support in identifying sources of funding / Support in drafting the grant application	430	30.0%	Equipment investment; Funding for implementation of the idea; Support for the preparation of the SI2E grant application; Rural Development Programme grant application (young farmer).
Business Plan Development	215	15.0%	Validation of the business plan and marketing strategy; Elaboration of the business plan; Counselling in the business plan; Technical support for drafting business plan.
Advertising of business (communication and dissemination)	119	8.3%	Consulting specialized in marketing communication; Support in the Communication Plan; Creation of a website that allows the advertising of the entire range of products.
Business Development	103	7.2%	Follow-up on business expansion; Support in the implementation of local accommodation; Business development consulting.
Licensing	80	5.6%	Support in licensing processes; Legal proceedings in licensing; Support in licensing processes.
Firm Legal creation	79	5.5%	Clarification to the creation of the company; Help for business start-up; Bureaucratic support for company creation.
Development and validation of the idea / Prototypes	65	4.5%	Specialized technical support for machine development; Institutional support for prototype construction and demonstration space; Idea validation.
Commercialization	64	4.5%	Marketing support; Wine Marketing Strategy; Support in the search of marketing channels.
Production	47	3.3%	Technical support in the production of almond with irrigation; Advice on the production of olive oil; Strategic diagnosis for the creation of a production line.
Management	29	2.0%	Management support; Support in organizational management; Support on start-up and initial business management.

According to the interviewees, the support given to entrepreneurs was fundamental for both entrepreneurs in the process of creating the business and entrepreneurs in the business expansion stage (companies already created), as mentioned, for example, by interviewee 1:

“In the case of entrepreneurs, who are still developing the idea, it is very important to have an experienced person (mentor) to help you mature this idea and to help you put this idea into practice. In the case of entrepreneurs with their business created, it is important to be supported to allow the resolution of problems that prevent the growing of the company. For example, we had an entrepreneur who made an application for financing and who had everything ready to start the company, but it lacked a license from Municipality, who did not respond to him. However, the EMER-n Program identified with the entrepreneur this problem, we went with the entrepreneur to the Municipality and within a week, the problem was solved. After a month, he had 10 jobs created. In essence, the aim is to help solve problems they have.”

The support provided by the EMER-N Program, between the periods 01 September 2016 to 28 February 2019, led to the creation of 212 companies, 897 supported entrepreneurs and 282 jobs created, as can be seen in Table 3.

Table 3. Main results of the EMER-n Program

Indicator	Goal	Accomplished
Number of inscriptions on the platform	700	1.295
Number of supported entrepreneurs	688	897
Number of Companies created	172	212
Number of companies created of high technology	4	11
Number of Jobs already created	172	282
Estimated forecast Investment	800.000 €	13.000.000
Turnover (cruise year) forecast	800.000 €	19.000.000

With regard to the sectors of activity, Table 4 presents the five main sectors of activity most supported by the EMER-n Program.

Table 4. TOP 5 of the sectors most supported in the EMER-n program

Sectors of economic activity	% of companies North of Portugal (2016)	% of companies supported	Examples of companies supported by the EMER-n Programme
Accommodation, restoration and similar	6.9%	28.8%	Regional tavern; rural tourism; restaurant; Local accommodation; (...)
Agriculture, animal production, hunt, forest and fishing	13.4%	21.2%	Production of blueberries in organic form; Wine Production; Forest exploration; Olive grove planting; Almond production; Cattle Breeding (...)
Wholesale and retail trade (...)	20.0%	11.8%	Clothing Store; Marketing of regional products; Mini market; Fish Hawker Sale (...)
Other service activities	4.5%	10.0%	Veterinary Services; Laundry Self Service; Vehicle washes; Hairdressing services (...)
Manufacturing	8.1%	9.5%	Sausages manufacturing industry; Craft beer Production; Manufacture of Handmade chocolate; (...)
Total	52.9%	81.3%	

Source: Own elaboration and data PORDATA (2016)

Interviewee 6: “[...] If there are new businesses there is more employment and there is more way to create value.”

Interviewee 3: “I think the added value of the EMER-n Program is the network of contacts, the possibility of being able to support several areas and giving the hand to entrepreneurs who often need very simple things, such as licensing. In addition, it helped to fix people inside the region once, that we have cases of people who came from large cities, such as Porto, to recover vineyards or open local tourism houses.”

Interviewee 4: “The added value of the program is to make available to the entrepreneurs specialized technicians, called by mentors or facilitators, who with their experience can support the businesses and projects of entrepreneurs. I.e., the idea is that with the experience gained can facilitate, on the one hand, the emergence of new businesses and, on the other hand, to reduce the time of creation of these new businesses. In addition, our partnership with universities and polytechnics would allow entrepreneurs to take innovation and technological tests that they would otherwise be unable to do.”

Interviewee 2: “The EMER-n provided access to highly specialized consulting services, enabling entrepreneurs in any region of the territory to have the same opportunities.”

In short, it is possible to conclude that the EMER-n Program led to the creation of an entrepreneurial ecosystem through a partnership between the various stakeholders, which allowed support to entrepreneurs who wanted to create their own business as well as to entrepreneurs with companies already created. In addition, this partnership between stakeholders allowed them to develop certain competencies (dynamism, knowledge about the difficulties of entrepreneurs, etc.) that will allow them to be more autonomous and effective in the future.

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PARALLEL SESSION 7

PROMOTION OF ACADEMIC ENTREPRENEURSHIP: THE ROLE OF JUNIOR ENTERPRISES AND ENTREPRENEURSHIP EDUCATION

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Extended Abstract

Abstract

This study tests the effect of junior enterprises (JEs) and entrepreneurship education (EE) on the entrepreneurial intention of higher education students. The results show that students enrolled in JEs showed higher levels of attitude towards behaviour (ATB) and perceived behavioural control (PBC) than those not enrolled, and that students enrolled on both JEs and EE reported higher values in entrepreneurial intention (EI) and all its antecedents. Also through a regression analysis, this study confirms the significant and positive impact of ATB and PBC on EI. The findings suggest a complementary role of both initiatives, and proposes a deeper integration of extra-curricular activities and EE on higher education courses' curriculum in order to promote students' entrepreneurial intentions. The study also contributes to the research on the theory of planned behaviour and for higher education institutions policies

Keywords: Junior enterprises; entrepreneurship; higher education; practical education; entrepreneurial intention; theory of planned behavior

1 Introduction

Entrepreneurship has been gaining particular attention in the last decades from both the political and academic arenas since it is considered a catalyst of social and economic development in a region (Etzkowitz, Webster, Gebhardt, & Terra, 2000; Power & Malmberg, 2008). Therefore, both at national and European levels, a set of public policies and government initiatives have been implemented in order to establish the conditions for individuals to start their own companies (e.g. European Commission, 2012; OECD, 2018; European Union, 2013). In this case, Universities play a crucial role since they have the "civic duty to engage with wider society on the local, national and global scales and to do so in a manner which links the social to the economic spheres" (Goddard, 2009, p. 4). This has fueled the development of a new paradigm in higher education where, along with knowledge production and education activities, the promotion of entrepreneurship, as well as the development of an entrepreneurial mindset among students, has been included in the mission of those organizations.

Usually, universities promote different types of initiatives to foster entrepreneurship, that more specifically are aimed at: i) Establishing the conditions for entrepreneurial learning such as the promotion of curricular entrepreneurship subjects and extra-curricular entrepreneurship programs; and ii) Contributing to the creation of new businesses, through providing support infrastructures and, in some cases, seed funds. Typically, those initiatives coexist in the same institution, and it is not unusually to see them compete for public awareness and institutions' resources, such as financial support and infrastructures, since those are not always perceived as complementary or each other enhancers. As a consequence, in spite of promoting the development of entrepreneurial intentions, those initiatives are merely teaching and raising awareness of students for entrepreneurship and business topics.

This paper aims to assess the role of curricular entrepreneurship subjects and extra-curricular entrepreneurship initiative, such as the participation in a junior enterprise, in the promotion of students' entrepreneurial intention. More specifically, the paper discusses the complementary effects of both initiatives and its implications for the definition of an effective strategy for the promotion of entrepreneurship within universities and regions. The paper proceeds as following: in section 2 present a concise overview of relevant literature and proposed hypothesis. In turn, section 3 presents the methodology followed, section 4 shows empirical results and discussion. Finally, conclusions are presented in section 5, and limitations on section 6.

2 Theoretical background and Hypothesis formulation

2.1 University's extra-curricular initiatives for entrepreneurship promotion: the case of junior enterprises

Since the seminal work of Etzkowitz and Leydesdorff (2000), there has been an increasing debate about the different configurations that rule the relationship between academia, industry and the state. Nevertheless, in each one of those, the role of universities in the development of entrepreneurial ecosystems is nowadays unquestionable. On the one hand, universities are more and more active in encouraging and embracing the entrepreneurship of students and graduates (Mascarenhas, Marques, Galvão, & Santos, 2017), as well as providing the resources and infrastructures that nurture such initiatives (Guenther and Wagner, 2008; Maribel Guerrero, Urbano, Fayolle, Klofsten, and Mian, 2016). On the other hand, there is an increasing number of external initiatives acting within the academic context that add value to the strategies promoted by the higher education institutions, such as the Junior Enterprise (JE) Network.

The JE network is present in more than 500 universities of 40 countries, accounting for more than 990 JEs and 50000 students enrolled, mainly in Europe and Brazil (Junior Enterprise Global Council, 2018). The main purpose of the JE network is "to empower (...) students capable of and committed to generating a relevant impact" (JADE, 2017), through supporting higher education students to create a company-like organization called junior enterprise (JE). According to JADE (2017), the main benefit of JEs is their capacity to promote a business-education approach through a learning-by-doing methodology where students learn how to strategically manage and develop a company by working in one. JEs are considered labs that enhance students' employability, and, at the same time, create an impact in the society by fostering growth in the local SMEs that benefit from JEs' services.

Several studies highlight the positive effect of extra-curricular activities, such as business incubators, information centers, and financial aid, have on entrepreneurial intention (Fayolle et al., 2006; Groen, Ulijn, & Fayolle, 2006; Laukkanen, 2000). Nevertheless, there are also studies that mentioned that those activities alone do not encourage entrepreneurial activity, rather it has a neutral effect on university students (Bell & Bell, 2016; Coduras, Urbano, Rojas, & Martínez, 2008; Nabi, Holden, & Walmsley, 2006).

Despite the research carried out around JEs being very scarce, the few studies that exist highlight that JEs provide a context where students can gain practical experience and integrate theoretical knowledge and practice, as well as to improve their business network (Bogo, Henning, Schmitt, & Marco, 2014). Other studies argue that JEs are relevant for the development of students' entrepreneurial and managerial skills, improving their employability and fostering their entrepreneurial spirit (European Commission, 2012; Pennarola, Pistilli, & Dawson, 2016).

- **H1a:** There is a positive and significant effect between the participation in a Junior enterprise and entrepreneurial intention;
- **H1b:** There is a positive and significant effect between the participation in a Junior enterprise and attitude towards behaviour;
- **H1c:** There is a positive and significant effect between the participation in a Junior enterprise and perceived behaviour control;
- **H1d:** There is a positive and significant effect between the participation in a Junior enterprise and social norms.

2.2 Entrepreneurship education and students' entrepreneurial intentions

The question of whether or not entrepreneurship could be taught has been fuelling many debates among academics and policymakers. Despite the impact assessment of entrepreneurship education (EE) in students' behaviour still remains a matter of extensive debate in this research field (Vaicekauskaite & Valackiene, 2018), most of the studies argue that EE influences students' behaviour, and it raises students' future intention of creating a new business (Bae, Qian, Miao, & Fiet, 2014b; Hussain & Norashidah, 2015; Unger, Rauch, Frese, & Rosenbusch, 2011; Zhang, Duysters, & Cloudt, 2014). Krueger, Reilly and Carsrud (2000) consider that this intention is a consciously planned intentional behaviour, being entrepreneurial intention (EI) considered an antecedent of the entrepreneurial behaviour. Other studies mention that entrepreneurship education (EE) enhances students' skills, like flexibility, adaptability, and resilience (Welsh, Tullar, & Nemat, 2016), as well as it helps to bridge the gap between entrepreneurial attitudes and actions (Rauch & Hulsink, 2015). Also, it prepares individuals with entrepreneurial thinking that contributes to economic development and sustainable communities (Consortium for Entrepreneurship Education, 2002). These effects have boosted the implementation of EE programs in many educational institutions worldwide. Nevertheless, there is still the need to clarify the best approaches, contents and pedagogical methods to be used (Egerová, Eger, & Mičík, 2018). There are some approaches highlighting the importance of learning initiatives where students experience in performing a job in the real context enhances entrepreneurial skills and behaviour (Daniel, Pita, & Costa, 2016; Morris et al., 2013). Thus, the knowledge accumulated at university should be combined with the experience gained through extra-curricular activities (Toutain, Fayolle, Pittaway, & Politis, 2017). Despite many evidences of the benefits of engaging in extra-curricular training activities (Vazquez, Lanero, Gutierrez, & Garcia, 2011), in the case of promoting students' entrepreneurial behaviour there is still a lack of knowledge regarding the benefits of complementing formal EE training with extra-curricular activities (Pittaway, Gazzard, Shore, & Williamson, 2015).

- **H2a:** There is a positive and significant effect between the simultaneous participation in EE and in a Junior enterprise and entrepreneurial intention;
- **H2b:** There is a positive and significant effect between the simultaneous participation in EE and in a Junior enterprise and attitude towards behaviour;
- **H2c:** There is a positive and significant effect between the simultaneous participation in EE and in a Junior enterprise and perceived behaviour control;
- **H2d:** There is a positive and significant effect between the simultaneous participation in EE and in a Junior enterprise and social norms.
- **H3:** The higher the knowledge and experience on entrepreneurship, the higher the attitude towards the behaviour and perceived behaviour control.

3. Methodology

3.1 Sample

The final sample comprises 515 higher education students from 12 countries, being the most represented Portugal (53.98%) and Brazil (36.31%). Respondent's age range between 18 and 45 being the mean age 21.28 (SD= 2.76). Regarding gender, 261 (50.68%) were males and 254 (49.32%) were females. The most represented study fields were social sciences (49.71%) and engineering and technology (34.17%). The sample was divided into three groups: Group 1 is composed of students that were not enrolled either in JEs or EE courses (N=154; 29.90%); Group 2 is composed by the students who were enrolled in JEs but never take any EE course (N=243; 47.18%); and Group 3 is composed by the students who were enrolled in JEs and in EE courses (N=118; 22.91%);

3.2 Survey and Statistical Procedures

Data was collected using a survey that was distributed to students through online platforms and face-to-face in Portuguese universities. The survey was developed based on Liñán and Chen (2009), that measure EI and its determinants based in Ajzen's (1991) TPB. Within the EI literature, Ajzen's (1991) Theory of Planned Behaviour (TPB) is the model that has received the most research attention (Daniel & Castro, 2018). According to the TPB framework, the intention that precedes any type of planned behaviour is determined by three factors: attitude towards the behaviour (ATB) and subjective norms (SN), both reflecting the perceived desirability of the behaviour, and perceived behavioural control (PBC), that reflects the feasibility of the behaviour (Krueger et al., 2000).

All the 21 items were measured using a seven-point Likert scale with options ranging from 1 (strongly disagree) to 7 (strongly agree). The survey reliability was evaluated using Cronbach's alpha. Alphas values range from .856 and .941, being .65 the cut-off value according to DeVellis (2012). Thus, we assume a very good internal consistency of the scales.

Data collected were statistically analysed utilizing IBM® SPSS (v.25 for Windows). Mean group differences were computed using independent t-tests procedure. In association with this test, the effect size was calculated using Cohen's d (Cohen, 1988). Multiple linear regression analyses were computed to test the direct effects between EI and its antecedents and compare the results of those analyses between the groups.

4. Results and Discussion

Firstly, we tested if there were mean differences between Group 1 and Group 2. Through this analysis we verify the effect of JEs on EI and its antecedents in the students that never had participated in EE courses. Table 1 shows that the two groups have statistically significant differences in the variable attitude towards behaviour $t(395)=2.14$; $p<.05$, $d=.226$ and perceived behaviour control $t(395)=8.59$; $p<0.01$, $d=.886$. Therefore, students' participating in JEs reported higher ATB and PBC than those who did not participate in JEs, suggesting that these extra-curricular activities while giving students practical experiences and approach to the business world, increase their attitude and perception that they are capable of performing the entrepreneurial behaviour. Despite being significant, the effect size of ATB ($d=.226$) is considered small, in contrast with the effect size of PBC ($d=.886$) which is considered high according to Cohen's (1988). This result challenges past findings that didn't find this relationship (Souitaris, Zerbinati, & Al-Laham, 2007), being in line with Arranz et al. (2017) that found a positive impact of extra-curricular activities on ATB and PBC. This finding supports our hypotheses 1b and 1c.

Table 1 - Independent t-test between Group 1 and Group 2.

	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>
Attitude Towards Behaviour	Group 2	243	5.17	1.22	3.39	< 0.05	.226
	Group 1	154	4.91	1.08			
Perceived Behaviour Control	Group 2	243	4.11	1.16	4.34	< 0.01	.886
	Group 1	154	3.15	1.00			
Social Norms	Group 2	243	5.19	1.23	2.11	.894	.017
	Group 1	154	5.17	1.07			
Entrepreneurial Intention	Group 2	243	4.42	1.56	5.33	.095	0.171
	Group 1	154	4.17	1.36			

In a second analysis, we tested if there were mean differences between Group 2 and Group 3. Through this analysis we verify the effect of EE courses on EI and its antecedents in the students that participate in JEs. Table 2 shows that the two groups have statistically significant differences in all variables: attitude towards behaviour $t(359)=2.22$; $p<.05$, $d=.255$; perceived behaviour control $t(359)=3.47$; $p<.001$, $d=.396$; social norms $t(359)=2.27$; $p<.05$, $d=.258$; and entrepreneurial intention $t(359)=3.00$; $p<.01$, $d=.340$. These results suggest that even for students' participating in extra-curricular activities, as JEs, the role of EE on increasing their propensity to start a new venture is still relevant. Extra-curricular activities may lack on giving theoretical knowledge about entrepreneurship (Arranz et al., 2017), and therefore EE and these activities should complement each other rather than substitute (Vazquez et al., 2011). This result confirms the positive relationship between EE and EI reported on Bae et al.'s (2014) review. These findings support hypotheses 2a, 2b, 2c, and 2d.

Table 2 - Independent t-test between Group 2 and Group 3.

	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>
Attitude Towards Behaviour	Group 3	118	5.47	1.13	2.08	<0.05	.255
	Group 2	243	5.17	1.22			
Perceived Behaviour Control	Group 3	118	4.57	1.11	1.18	<0.01	.396
	Group 2	243	4.12	1.16			
Social Norms	Group 3	118	5.49	1.09	1.56	<0.05	.258
	Group 2	243	5.19	1.23			
Entrepreneurial Intention	Group 3	118	4.93	1.44	2.27	<0.01	.340
	Group 2	243	4.42	1.56			

Since ATB, PBC and SN are considered as antecedents of the EI, we went on further exploring the relationship between these variables. Multiple regression was conducted to verify these relationships in each of the three groups. Using the enter method it was found that the three variables explain a significant amount of the variance in the EI of students, in Group 3 ($F(3, 114)=57.52$, $p<.001$, $R^2=.707$), in Group 2 ($F(3, 239)=137.49$, $p<.001$, $R^2=.698$) and in Group 1 ($F(3, 150)=60.87$, $p<.001$, $R^2=.644$). The information in Table 3 allows us to check for multicollinearity in our multiple linear regression analyses. Tolerance values are between .562 and .861, far above the threshold of .2 urged by O'Brien (2007).

The results shown in Table 3 indicate that in the three groups only ATB and PBC significantly predict the EI of students. Social norms did not significantly predict EI in any group. Comparing the results of the three groups, we verify the increasing impact of ATB on the groups where students participate only in JEs ($\beta=0.737$) and in both JEs and EE ($\beta=0.785$). In the opposite side, there is a decreasing impact of PBC with the highest value in Group 3 ($\beta=0.179$).

Table 3 - Multiple Regression Analysis of ATB, PBC, and SN on entrepreneurial intention: comparison between groups

		<i>B</i>	<i>SE</i>	β	<i>Tolerance</i>	<i>R</i> ²
Group 3	Attitude Towards Behaviour	1.01	.077	.785**	.717	.707
	Perceived Behaviour Control	.158	.071	.122*	.861	
	Social Norms	.008	.075	.066	.811	
Group 2	Attitude Towards Behaviour	.944	.053	.737**	.745	.698
	Perceived Behaviour Control	.199	.052	.147**	.851	
	Social Norms	.085	.050	.067	.804	
Group 1	Attitude Towards Behaviour	.872	.082	.691**	.562	.644
	Perceived Behaviour Control	.243	.077	.179**	.735	
	Social Norms	.011	.074	.009	.707	

Note: * $p < .05$ *** $p < .001$.

These results may suggest that increasing the knowledge and experience on entrepreneurship, the higher the attitude in favour of performing an entrepreneurial behaviour and consequently the higher the impact on EI. The decrease of the impact of PBC on EI can be explained by the fact that as the knowledge about entrepreneurship increase, the perceived challenges and fears also increase, decreasing the PBC of students. Consistently with previous research the constructs ATB and PBC are significantly correlated with EI (Liñán & Chen, 2009) among our sample, having attitude towards behaviour the strongest correlation with EI (Ajzen, 1991). These results partially support our hypotheses 3.

5. Conclusions

Our findings indicate that students who have both EE and participate in a JE have higher entrepreneurial intention and its antecedents, suggesting that this type of extra-curricular activities should be integrated on EE since they complement formal programs with innovative forms of learning (Padilla-Angulo, 2017), confirming a recommendation of the European Commission (2012) about the importance of including practical training, as JEs, in the education programmes. This study also contributes to the TPB literature by confirming the impact of ATB, SN and PBC on EI and by testing the effect of external influences (the participation in JEs and EE) on attitudes and intentions. The results have important implications for higher education institutions. Despite many of them provide entrepreneurship training courses, those should encourage students to join extra-curricular activities or even create their own at the institution to complement their skills' development. Participation in extra-curricular activities can be promoted by business institutions in many ways, for example, by allowing students to obtain academic credits for the participation or through supporting financially or logistically the organizations that promote these activities.

6. Limitations

As with any empirical investigation, the present study has several limitations. On the one hand, the study addresses the entrepreneurial intention of students, but not the actual behaviour due to the time lag problem. Moreover, there is also the risk of self-reported bias on the answers due to social desirability bias, for example. On the other hand, in the survey it was only asked if students had participated in some entrepreneurship training course, which can be an external training or a subject on their course, therefore the tools and approaches to EE may be very distinct in our sample. Finally, because JEs have their own recruitment process, there is a possible 'self-selection problem' of students who might have previously developed some of entrepreneurial attitudes and skills assessed by the questionnaire.

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PARALLEL SESSION 7

HIGHER EDUCATION SUPPLY AND THE LABOUR MARKET: CROSSINGS OR PARALLEL PATHS?

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Extended Abstract

The most recent global economic crisis has exposed the structural weaknesses of economies, limiting their capacity to develop, with youth unemployment standing out as one of the greatest challenges in Europe since the beginning of the crisis (Ornellas, Falkner, & Edman Stålbrandt, 2019). Thus, the agendas of supranational organizations such as the European Commission and the World Bank have focused on combating unemployment through a focus on education and research, since this is a scourge with strong economic, political, and social implications that threaten the ability of people to reach an adequate level of well-being (Feldmann, 2009). The Europe 2020 strategy aims to create more jobs and ensure better living conditions. This requires improvement in the quality of teaching, enhancement of research performance, and promotion of innovation and knowledge transfer across the Union (European Commission, 2010). The 2030 Agenda of the United Nations also aims, as one of its objectives for sustainable development, to guarantee access to inclusive, quality, and equitable education to promote opportunities for lifelong learning for all.

Education and science are thus the main drivers for the development of a territory or region (Cinnirella & Streb, 2017). The literature emphasizes Higher Education Institutions (HEIs) as key players in promoting local economic development, as they can generate human capital as well as attract highly qualified people to the region (Ma, Kang, & Kwon, 2017). They contribute to a valuation of regional human capital through graduate students (Sezonova, Galchenko, & Khodirevskaya, 2016), who are the richest and most promising part of the potential endogenous (Kroll, Schricke, & Stahlecker, 2013) and the main predictor of regional productivity growth (Yirdaw, 2016). Education and training are thus key factors in the development of any country, helping to accelerate economic growth (Sarid, 2017). The best way to build human capital is through education, especially at the level of higher education (Pinheiro & Pillay, 2016). By investing in education, individuals are expected to be equipped with a range of skills to improve their position in the labour market, as well as their income, particularly through higher salaries (Griffin & Coelho, 2019). There is, therefore, an increasing recognition that a population with a higher education level may be more innovative and better able to adapt to technological change (Bodman & Le, 2013), since technological developments require an increase in skills that, in most Western societies, require post-secondary education as the minimum level for successful entry into the labour market (Guichard & Larre, 2006).

Consequently, regions that raise the average education level of their employees tend to introduce novelties into the existing industrial context and become more innovative (Agasisti, Barra, & Zotti, 2017).

The effect that human capital exerts on economic growth involves several means. On the one hand, an increase in human capital directly affects economic growth, increasing labour productivity in production (Teixeira & Queirós, 2016). On the other hand, it constitutes an important contribution to research and, consequently, increases labour productivity indirectly, accelerating technological change (Cinnirella & Streb, 2017; Sánchez-Barrioluengo & Consoli, 2016). Graduates can also create new enterprises that boost the dynamics of the local economic environment as well as contribute to increasing the innovation, creativity, and productivity of local companies (Agasisti et al., 2017).

HEIs must do more than simply educate and investigate to be able to play their regional role. They should engage with other stakeholders in their regions, provide opportunities for lifelong learning, and contribute to the development of knowledge-intensive jobs that enable graduates to find local employment and remain in their communities (Albulescu & Albulescu, 2014). According to Sánchez-Barrioluengo and Consoli (2016), the contribution of HEIs to their local environment is often confused with their ability to provide skilled workers to local labour markets. Cooke (2005) describes these institutions as knowledge-generating subsystems that flow through the region and create spillovers for local employers, including the private sector (Goddard & Chatterton, 1999). In this perspective, HEIs generate human capital in the form of specific knowledge and skills that will be incorporated into the workforce (OECD, 2008).

In fact, HEIs around the world are under pressure to produce employable graduates (Maxwell & Armellini, 2019) to combat unemployment and foster employability, understood as the set of skills, knowledge, and personal attributes that allow graduates to obtain employment and to act successfully within it (Frankham, 2017). The recommendations of the European Commission for the modernization of higher education call for the development and implementation of strategies, both in terms of research and pedagogical practices, which encourage the quality of teaching and learning (Comissão Europeia/EACEA/Eurydice, 2014), in order to ensure the development of skills that promote graduates' employability (Jackson & Edgar, 2019). Universities become more aware of the need to address not only the technical skills of students but also the generic skills needed to successfully perform in the ever-changing workplace. The disappearance of some professions, along with the emergence of new ones, is now recurrent, challenging HEIs to continuously plan their educational offerings adjusted to the needs of society (Mason, Williams, & Cranmer, 2009). Universities are expected to explain how their courses contribute to employability, as future employment prospects are one of the reasons why students enter higher education (Taylor & Hooley, 2014).

On the other hand, the difficulty of recruiting the qualified people that companies need poses serious risks to companies' competitiveness, financial health, and even survival (Frankham, 2017). In this context, the qualification of human resources oriented to the needs of the companies is fundamental (Pang, Wong, Leung, & Coombes, 2019). HEIs should establish links with public, central, or local bodies and with companies to ensure that their programs and content lead to higher levels of employability (Rae, 2007). According to Frankham (2017), higher education has, over the last three decades, responded to this problem by including changes in the pedagogical approach, curriculum design and organization, and evaluation regimes (Mason et al., 2009).

According to Chatterton and Goddard (2000), the creation of specialized courses locally oriented to the characteristics of the region, especially those closely linked to the growing Industries in the region, may offer greater possibilities for success and mobility in the regional labour market. This teaching often attracts representatives from local industry to add practical experience to the teaching process. In addition, the courses can be collaboratively undertaken with regional partners and addressed to regional issues.

There is, however, the reverse of the medal, since education programs that are very focused on the economic base of the region may lead to courses being more susceptible to cycles of growth and contraction in the regional economy. In addition, courses geared to regional needs may be of little attraction to non-local students and may also adversely affect student performance in national labour markets.

From this analysis emerges a noteworthy problem, which is that the education system may not be taking into account the differences between regions within national or other political systems, which means that education policy is defined from the top down, disregarding localized particularities (Arbo & Benneworth, 2007; Chatterton & Goddard, 2000). Teaching and research in HEIs may not be sufficiently targeted to specific economic and social objectives. This environment that confronts HEIs and regions has important implications for institutional management. In the past, higher education in most countries was funded primarily by national governments to meet the needs of the national labour market for skilled labour and to provide an ability to meet national needs for research and technological development. In this sense, national policies and systems represent a very important constraint on what can be achieved by universities in their regions (Chatterton & Goddard, 2000).

In order to better understand the contributions of HEIs to the specific needs of the regions, especially regarding employability, an empirical study is developed that demonstrates the relationship between the educational offerings of Portuguese universities and graduates' employability. The study seeks to answer a research question—Is there an interconnection (or adjustment) between the educational offerings of Portuguese universities and the labour market needs of the regions where they are inserted?—with regard to the northern region of Portugal. This study aims to determine what role Portuguese universities play in the education system, trying to understand whether their objective is to contribute to the increase of human capital at the service of employability, adjusting the educational offerings to the needs of the labour market, or whether they have the objective of advancing knowledge per se and management of national objectives for higher education.

To carry out the study according to the intended goal, on the demand side, the employment offers received by Employment and Vocational Training Institute (Instituto de Emprego e Formação Profissional, IEFP) are analysed, and on the supply side, the educational offer of public universities in this region—University of Porto (UPorto), University of Minho (UMinho), and University of Trás-os-Montes and Alto Douro (UTAD)—is examined. We chose to study the reality of universities because it is already inherent to the mission of polytechnical institutes to respond to specific needs of employability.

The analysis is based on secondary data provided by the IEFP, referring to the job offers received in its employment centres in the northern region of Portugal during the first half of 2018. This database allows us to characterize the offers (licentiate, master, and doctorate) for the period under study, consisting of a total of 1 265 offers distributed by different occupations.

Job vacancies are registered by the IEFP according to the Portuguese Classification of Occupations (Classificação Portuguesa de Profissões, CPP). In turn, universities classify their courses according to the National Classification of Education and Training Areas (Classificação Nacional de Áreas de Educação e Formação, CNAEF). Therefore, in the context of the objective of the study, it was necessary to create a correspondence table between CPP and CNAEF, in order to standardize the data analysis unit of the different sources and thus draw relevant conclusions. Until now this correspondence has been non-existent, so that this output is intended to make a relevant contribution to the area under study.

Secondary data is also used to characterize the educational offer of universities, but now it is collected from the universities under study, Directorate General of Higher Education (Direção-Geral de Ensino Superior, DGES) and Directorate General of Statistics of Education and Science (Direção-Geral de Estatística da Educação e Ciência, DGEEC). The treatment of data from all sources was done based on descriptive statistics, in order to answer the research question.

The results of this study verify that there is agreement between the educational offer of the universities and those that the job market seeks. Thus, it demonstrates that, in addition to the fact that the role of universities is essentially to promote research and the creation of knowledge for sound scientific and cultural preparation, it is also up to them to observe employability and market needs by outlining the necessity for an adjustment between the training offerings and the market needs of the region where the universities are located. The present study suffers from some constraints. First, the short period of time used to analyse the market needs has limited the formulation of conclusions and generalizations. At the time of writing, only one-semester data on job offers registered by the IEFP were available. Another difficulty was the lack of a basis of connection between CPP and CNAEF, so it was necessary to make such correspondence within the scope of this study in order to standardize the unit of analysis. Obviously, this procedure is subject to some subjectivity.

As a line of future research, it is our intention to deepen this research, in particular through the use of a broader database for a more comprehensive set of results. Additionally, we intend to complement the output of the secondary data with primary data obtained through interviews and to extend the geographical scope of the study to the other regions of Portugal.

This paper is organized in three parts. After the introduction, the first part consists of the literature review, which seeks to show the state of the art on how higher education is related to development and employability, as well as a brief description of the Portuguese higher education system. The second part develops the empirical study, with its analysis and discussion of results. The third part contains a brief conclusion, highlighting the main ideas to be retained.

Keywords: Regional Development, Higher Education, Employability, Labour Market, Educational Offer, Northern Portugal Region.

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PARALLEL SESSION 8

LOCATION OPTIMIZATION OF SOLID URBAN WASTE TRANSFER STATIONS

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Extended Abstract

Abstract

Portuguese municipalities have very high costs with the collection and treatment of solid waste. The the municipality of Felgueiras the current solution is that trucks that do the collection of the individual containers also are responsible for taking the solid wastes to the landfill. This solution represents high transport costs. Moreover, the trucks do not reach their maximum capacity. Aiming at reducing the costs and maximizing the trucks capacities, the installation of transfer stations is a solution that has been studied by several. In this work, an optimization model for support the decision on the location and installation of transfer stations on the municipality of Felgueiras is presented. Furthermore, two scenarios of the landfill installation are considered. The results show a significant reduction on the cost of solid waste collection and treatment, for both scenarios.

Keywords: Location problem; waste transfer stations; Optimization.

1 Introduction

The amount of solid urban residuals (SUR) produced on a municipality depends on the number of inhabitants and also on several other on factors, such as, eating habits, standard of living, commercial activities and seasonal activities (Sharholy, Ahmad, Mahmood, & Trivedi, 2008). Furthermore, solid urban waste management is a very complex issue since it depends on multiple variables at different decision levels.

According to Son & Louati (2016), it is essential to develop efficient models for the optimization of the vehicles that collect SUR, in order to reduce environmental emission and the associated investment costs. On the other hand, Chatzouridis & Komilis (2012), state that the costs include operational and capital costs of: construction of transfer stations, collection vehicles, semi-trailers and trucks, as well as SUR collection within the municipality, transportation costs from the transfer stations to the landfills.

Bing et al. (2015), consider two major sub-systems: the collection and the regional ones. The first one includes tactical and operational decision-making where collection planning, transport routes and internal logistics take place. The regional system concerns the network design where strategic decision-making stands, such as economics, legislation and extended responsibilities. Both are influenced by external drivers or incentives: political, economic, social, technological, ecological and legal factors.

The pressure felt by the members of the European Union regarding the legislation in this particular problem is increasing. Targets for sustainable developments are changing the goals in almost every supply chain for waste management. A sustainable performance intention is to transfer landfilling into recycling and re-use practices. However, in 2012, despite the legislation, 7% of SUR in Europe was still landfilled (Bing et al., 2015). In Portugal, at the strategic level, the separation of the recyclable waste (paper, plastic, metal, glass, etc.) is done by the producer at the collection point and then sent to a separation center to be recycled or reused. The rest of the waste, the undifferentiated one, is collected and sent to a landfill.

Considering the collection planning, the municipality of Felgueiras, different types of vehicles are used: collection trucks, with a pressing function; and single/multiple compartment trucks. To collect undifferentiated waste, single compartment trucks with pressing function are commonly used, which increases the vehicle capacity. The multiple compartment trucks are used to the differentiated waste.

Landfills are increasingly being implemented in isolated areas, far from urban waste producers. According to Monteiro et al. (2001), the increase in the distance between the collection point of the waste and the final destination (landfill) causes several problems, for instance, the delay in the collection routes, lengthening the garbage exposure in the streets; increased unproductive time of workers waiting for the return of the vehicle that went to the landfill; increased transportation costs and reduced productivity of pickup trucks, which are special and expensive vehicles.

Transfer stations are facilities located strategically with a great pressure function, that can reduce those problems. The solid wastes are discharged to the transfer stations with the purpose of preparing them to be transported by vehicles of greater capacity, making it economically viable when they are located (as is the rule) at distances of more than 25 or 30 km transportation costs (Monteiro et al., 2001). Largely, they are small compaction units and waste storage centers in sealed containers that are then transferred by a long vehicle to the landfill. This investment is relatively small and allows optimizing the collection process as well as rationalize means and minimize environmental impacts, such as, reduction of traffic; reduction of fuel expenses and reduction of CO₂ emissions into the atmosphere.

In this work, only the undifferentiated waste, i.e., the one that is destined to the landfill and do not go through sorting or any kind of recycling or reuse, is considered. The main objective of the present work is to determine whether the installation of a transfer station in the municipality of Felgueiras would be feasible or not, considering the minimization of transport costs associated with the collection trucks. Furthermore, we intend to verify if the installation would be compromised if a different destination of the landfill was considered.

2. The Case Study

The definition of SUR has evolved due to the differentiation of waste and the treatment to which it must be subjected in order to minimize pollution and to meet the internationally establish targets. According to the current law in Portugal, urban waste is defined as residues from households as well as other waste which, by their nature or composition, is similar to waste from households, as long as, the daily production does not exceed 1100 liters per producer. Therefore, there is only differentiation with regard to management responsibility: the municipalities is responsible when daily production is less than 1100 liters; and the producers of residuals in other cases - usually referred to as "large producers". Consequently, it is the responsibility of the Municipality of Felgueiras (CMF), the management of 60 ton a day. In fact, according to the last budget, these costs reached e 2 204 621 euros in 2018, which represents 13.97% of the value of expenses of municipal services. Of this amount, approximately, 1 272 000 euros, refers to undifferentiated waste, i.e., waste that is not separated and intended for selective collection and is therefore sent to landfill.

Inserted in the Tâmega and Sousa region, in the northeast of Oporto district, the municipality of Felgueiras does not meet legal and environmental conditions for the installation of a landfill, waste treatment or incinerator. Consequently, all SUR are transported to a landfill outside the municipality. For gather the necessary information the Chief of the Urban Services Division (USD) of CMF was contacted. According to him the collection and transport systems of SUR reaches high budgets due to its complexity, as it involves multiple operations costs, such as, the deposition, collection and transportation. As for the deposition and collection operation, CMF contracted an external company. This operation covers the distribution of street containers, which are placed strategically in defined places to facilitate the collection. The collection is carried out by a team of qualified personnel and their own equipment, which, hereinafter is referred to as collection trucks. These trucks are specially designed for this purpose and are adapted with their own mechanisms (elevators, compactors, differentiated deposits, cranes, ...) in order to collect SUR and the leaching waters that derive from their compaction and decomposition. The cost of the collection is therefore very variable and depends on several factors such as, the cost of installation, maintenance and cleaning of containers, capacities, mechanical specificities, number of circuits per week, etc. For this operation the total cost is close to 60 000 euros per month. The average cost per kilometer of a collection vehicle is approximately 6.5 euros and the pressing function of those trucks follows a ratio of 2/5 of the initial volume of the waste collected.

The collection trucks perform specific routes, determined by the external company, and then head towards the landfill of Lustosa, in Lousada, where undifferentiated residuals are transferred and managed. The CMF pays a fee per ton of deposited SUR. However, these facilities are close to its maximum capacity and CMF foresees the need to transfer the SUR produced in the municipality to another landfill located in Lousada. The cost of depositing at the Lustosa landfill represents e 46 000 euros per month. The Urban Services Division as identified in the past several months non-optimal deliveries, namely, collection trucks quite bellow their capacity, which translates into an aggravated cost of transport. Furthermore, the collection trucks return empty. These facts point to the viability of the installation of one or more transfer stations in the municipality in order to improve the route system and consequently reduce costs.

3. Methodology

The problem at hand can be seen as a location problem with an associated vehicle routing problem. A mixed integer model was used to model this problem. The model has as decision variables a binary variable indicating whether the transfer station should be installed or not in a particular parish, and continuous variables for the amount of SUR that must be transported from each parish to the transfer station. The following particularities are also considered in the model. It is considered that each parish is represented by its headquarters and associate the production of waste to each of these parishes. There are twenty parishes on the municipality of Felgueiras, only six have conditions for installing a transfer station. We have determined the shorter distances between each pair of parishes. Associated with each route between two parishes there is a cost of transportation. This cost is estimated using unit price of the kilometer of the vehicle of collection of SUR. On the other hand, the transport cost is associated with the volume of the truck after the first compaction, hence the conversion factor for these two phases are considered.

The installation of a transfer station has a cost that is paid using a loan of 1.5 million euros over a period of 10 years. This value includes all the work and equipment of the transfer station, which represents a daily cost of 410 euros. There is a cost of transport between the transfer station and the landfill. Since this transport is performed using long vehicles the associated cost is different from the collection trucks and depend on the distance between the transfer station and the landfill. The compaction and conversion in the trucks is of 90 % . The model also includes constraints regarding the quantities of SUR to transport and the maximum capacity of the transfer station.

4. Results and Discussion

The problem was modelled using AMPL language and solved using Gurobi solver. For all cases the optimal solution was found in a negligible computational time. The optimization model was used to solve the problem of determining the optimal location of the transfer station in two scenarios, corresponding to the landfilled being located at (1) Lousada and (2) Celorico de Basto. In both scenarios the model suggests that the transfer station should be installed in the parish of Margaride. Therefore, the SUR of all the parishes would be sent to this transfer station. Considering that CMF spends an average of 720 000 euros per month on the collection and transport of SUR, the savings of the installation of the transfer station relatively to the current situation of the municipality are significant. In fact, all the invested amount would have been recovered in a four years period and it is expected that close to 4.5 millions euros would be saved at the end of a 10 years loan. According to the results obtained in this study, it seems feasible to install a transfer station in the industrial zone of the parish of Margaride.

5. Future Work

The current work could be improved in several aspects. Some values (parameters of the model) that were used are the results of successive approximations. Therefore, in future work the estimation of these values should be improved. In particular the estimation of the SUR density in each phase of the process i.e., after compaction of the collection truck and after passing through the transfer station compactor. Moreover, the present model considers that the SUR is concentrated in a single point on the parish. This is far from being realistic. Therefore, the formulation should also include the associated vehicle routing problem.

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PARALLEL SESSION 8

MODELING THE WASTE MANAGEMENT IN NRP SHIPS

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Extended Abstract

Abstract

This case study intends to carry out an analysis of the waste management of the Portuguese Navy's ships, limiting the study to the residues referring in Annexes I, IV and V of Marpol 73/78, (the pollution by hydrocarbons, sewage and all types of garbage). It is analyzed how the storage and treatment of ship waste is carried out, checking the existing equipment, its operational status and whether there is an on-board waste management plan. However, it is not enough just to assess in terms of materials and procedures, it is also important to take into account the knowledge and the military on board cooperation for the environment . To complete this work was necessary to build and implement a questionnaire to the garrison of some selected NRP ship after the authorization of the Commander of Portuguese Surface Fleet. The statistical analysis of the results is still ongoing .

Keywords: Waste Management, Environmental Guidelines, NRP Ships, Literacy; Questionnaire, Statistical Analysis.

1 Introduction

As is well known, the surface earth is covered mostly by water in the liquid state, representing about 71% (Só Biologia, 2019), becoming a very important medium that helps regulate the balance of the entire climate system of our planet. The sea contains many other important factors for human survival, such as its high biodiversity and natural resources, which contribute to global economic development (APA, 2019; IMO, 1998 and IMO, 2019). Human activity has been intensifying with the growth of the global economy, and as a direct consequence the pollution of the sea is a problem that has increased over the last centuries with the rapid economic development and consequently the population increase. This high growth has created intense pressure on the environment, in this particular case at sea, where marine litter is a major cause of intense human activity (Griffin, 1994). Approximately 80% of the world trade volume is transported by sea (UN, 2018), causing heavy traffic of ships to be one of the main sources of pollution, which generates solid wastes, sewage and wastes from hydrocarbons, forgetting that they are also an atmospheric pollutant source (Griffin, 1994). This case study carries out an analysis of the waste management of the Portuguese Navy's ships, limiting the study to the residues referring in Annexes I, IV and V of Marpol 73/78.

2 Preliminaries

With the principle of sustainable development, key legal instruments governing the issues of the protection of the marine environment with respect to the management of ship-generated waste and cargo residues in European Union seaports are an important factor to study. The reception of wastes and cargo residues in seaports is particularly important to organize. In (Deja, 2013), the authors analyse the existing system of environmental fees, the calculation criteria for such fees, and the techniques used in selected European Union seaports to submit ships' waste notifications considering several seaports from Europe, namely Rotterdam, Antwerp, Klaipeda, Szczecin .

Another issue that can be considered in the present theme is the life cycle of a ship has an age limit related to its operation. When the ship is not economically profitable any more, it will be recycled or scrapped. Since the scrapped ship has plenty of hazardous materials, special care should be carried out to manage the wastes in accordance with the national and international available regulations. With regard to this a ship recycle yard that conducts ship breaking and recycle of the ship's outfits, machineries, and infrastructure should be well designed in order to comply to all regulations that prevent it from producing harmful and polluting wastes to human and environment. The authors of (Sunaryo, 2015) promoted a study aimed to design an environmentally friendly or green ship recycle yard a pilot project in anticipation to the booming of old used merchant ships.

A special attention is given by the authors of (Darci et al., 2011) to the legal regulations of international law which define the ways of dealing with waste and exhaust gases on board ships (MARPOL; MARPOL Annexes 5 and 6). Shipping books and documents are issued in accordance with the classification societies of particular countries due to standardization and automation in the handling of cargo on ships.

The Portuguese Navy has done an effort to become increasingly greener over the last few years. The Admiral Chief of Staff from the Navy defined a Security and Health Policy in the Work and Environment of the Navy, where some environmental guidelines are found for the units, both on land and for ships, where all military, militarized and civilian cooperate and contribute to good waste management and environmental protection. The author of (Monteiro, 2016) presents a good summary about this effort. The present manuscript completes such study, carrying out an analysis of the waste management of the Portuguese Navy's ships, limiting the study to the residues referring in Annexes I, IV and V of Marpol 73/78.

3 Empirical Application and Results

After authorization by the Portuguese Surface Fleet Commander, the data collection was carried out through questionnaires and some successive visits to the ships, in which the person responsible for waste management was boarded on board each ship and the questionnaires were distributed to the military belonging to each garrison. This manuscript contains a partial data analysis, using an incomplete sample of size 48 individuals.

The questionnaire contains 22 questions and it is divided into two parts, the first with the socio-demographic details, and a second part, with questions that allow to evaluate knowledge, attitude and practice.

The initial part concerns the socio-demographic information about each participant. The second part consists in questions of open or closed response, with the possibility of choosing more than one answer in each question and also some questions in the form of Lickert scale with 4 levels: 1 - totally disagree, 2 - partially disagree, 3- agree, strongly agree. This second part aimed to evaluate the participants' knowledge, attitudes and practices regarding waste management, comprising questions about knowledge issues, other about attitudes and some questions that consider practice details. After filling the questionnaire, the participant should give his participation as finished and submit the questionnaire to the researcher.

In a preliminary data analysis of questionnaires using the incomplete data set, and taking into account the non-quantitative nature of the involved variables, were calculated measures of association, non-parametric Spearman correlation coefficient, non-parametric test of Friedman for paired samples, etc.

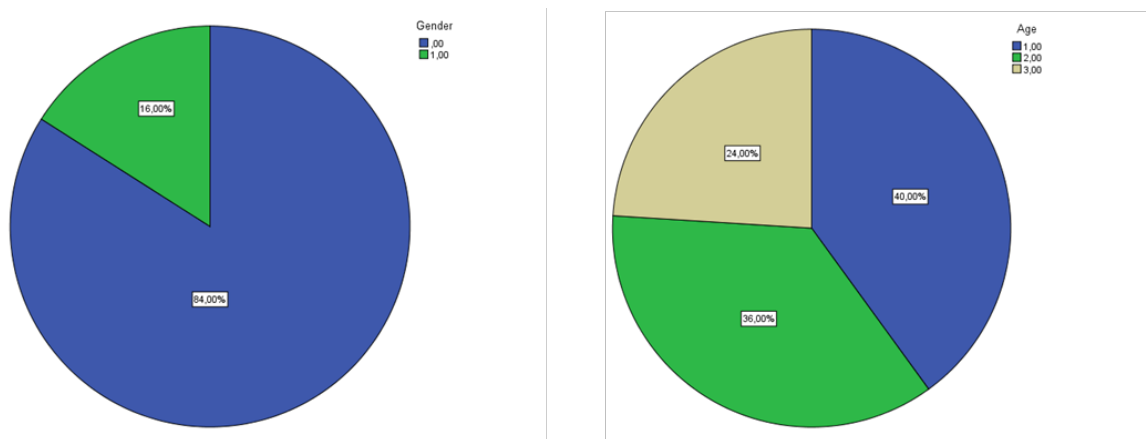


Fig. 1 Sample distribution per gender, per age. Left: Gender (0-male, 1-female); Right: Age (1-[20,30[, 2-[30,40[, 3-[40,50[).

The characterization of sample is found in Fig. 1 where are summarized the distribution of gender and the distribution of age education about environmental issues of participants and recycling action at home information. In sample, there are 84% men and 16% women. There are almost 40% of people less than 30 years older, 36% between 30 and 40 years old. The oldest people have 50 years.

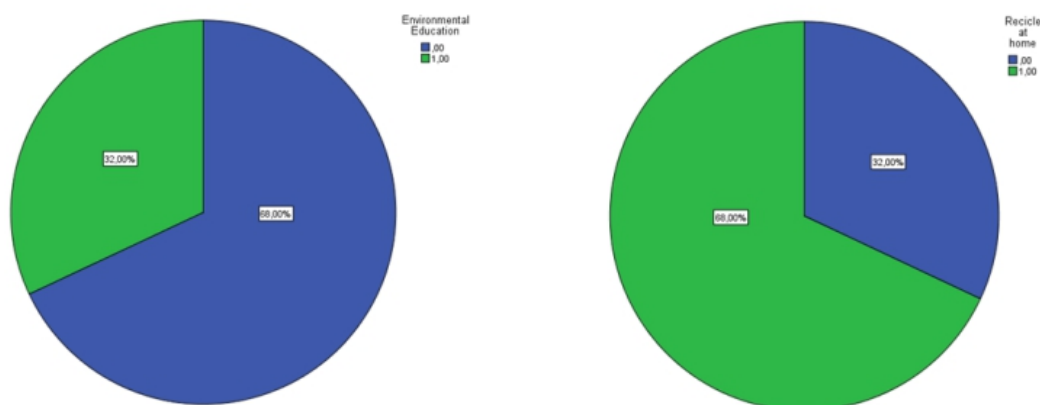


Fig. 2 Sample distribution per environmental education and per recycle activity. Left: Formation in environmental issues (0-no, 1-yes). Right: Recycle at home 0-no, 1-yes).

In Fig.2 are displayed the distribution of education about environmental issues of participants and the distribution about recycling action at home information. About 32% have attended some formation about environmental education. 68% of participants do recycle at home

We measure the homogeneity and internal consistence of questionnaire and respective validation. The alpha-Cronbach coefficient was adequate, giving the indication of a good internal consistency. This measure of questionnaire reability is improved if some questions are not considered. The same issue is confirmed when were performed several tests to compare the answers of questions associated with knowledge issue.

The paired T-test, McNemar's test for frequencies comparison, Crochan's Q test for binary variables comparison. Also were performed the Friedman test (p-value<0.001) and kendalls coefficient of concordance test (p-value<0.001). All tests conduced to the same conclusion: the distributions of considered questions are not the same. Notice that the Spearmann correlation coefficient conduces to significant relations between some questions, also Friedman's tests supports such association (p-value<0.001).

From Table 1 we can see the quartiles associated to each question. More than 50% of participants declare that there exists the daily environmental care, consider it an important procedure, also consider that some waste can be left in sea, the waste storage contributes to welfare, security and hygiene of staff. Also consider that the existent equipment to process waste is not enough.

The staff declares to know the internal and external rules but claims that there is not a goof offer of formation in environmental education. Besides this the environmental awareness is increasing.

We also have applied an exploratory factorial analysis to reduce the dimensionality of the problem. Some of the four selected factors were identified and a meaning can be attributed. Clearly, the first factor is associated to knowledge, the second factor is associated to attitude and practice, the third and fourth factors are not easy to get an interpretation but the sample is still being collected. We expect that with the complete data set the results could evidence clearly the "meaning" of all factors. A detailed analysis of the data set will be complete in an extended version of the present work.

Questions Response Quantiles			
	Percentiles		
	25 th (1st Quartile)	50 th (Median)	75 th (3rd Quartile)
Q2_1	2,2500	3,0000	3,7500
Q2_2	3,2500	4,0000	4,0000
Q2_3	1,0000	2,0000	2,0000
Q2_4	1,0000	1,0000	2,7500
Q2_5	1,2500	2,0000	3,0000
Q2_6	2,0000	3,0000	4,0000
Q2_7	1,0000	1,0000	1,0000
Q2_8	1,0000	1,0000	3,0000
Q2_9	4,0000	4,0000	4,0000
Q2_10	2,0000	2,0000	3,0000
Q2_11	1,0000	2,0000	3,0000
Q2_12	3,0000	3,0000	3,7500
Q2_13	1,0000	2,0000	2,0000
Q2_14	1,0000	2,0000	3,0000
Q2_15	3,0000	3,0000	3,0000
Q2_16	2,0000	3,0000	3,0000
Q2_17	2,0000	3,0000	3,0000
Q2_18	2,2500	3,0000	3,0000
Q2_19	3,0000	3,0000	4,0000
Q2_20	2,0000	3,0000	3,0000
Q3	0,0000	0,0000	,7500

Table 1. Questionnaires answers. Percentiles: 25th, 50th, 75th

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PARALLEL SESSION 8

MATHEMATICAL MODELLING OF OUTSOURCING IN SHOE INDUSTRY

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Extended Abstract

Abstract

Recurring to outsourcing services is a current strategy for companies in the shoe sector, especially to face the increase in demand of the Spring/Summer and Autumn/Winter collections production. The shoe production process consists of two main phases: Cut and Seam Service and Assembly and Finishing Service. The present work is elaborated in collaboration with a company in the shoe sector that has at its disposal a set of suppliers of services for each of these two phases. Each supplier offers their services at different costs and has different production capabilities. A decision making model, consisting on a hierarchical mathematical modelling of the two production phases, is presented. The overall objective is to maximize production while minimizing costs and maintaining product quality. For validating the proposed methodology, several real instances provided by the company are tested. The results obtained for different time horizons are compared with the firm's current strategy. For the tested instances, weekly planning presents the largest reductions on the costs.

Keywords: Linear Programming; Shoe Industry; Outsourcing.

1 Introduction

Peaks of production mostly related to the Seasons of the year, namely, Spring-Summer and Autumn-Winter collections, characterize the shoe industry sector. The large number of orders led to a production capacity deficit. Due to scarce internal resources, companies have the need to recur to external services providers to fulfill the execution of all received orders and thus ensuring fixed costs control.

Using outsourcing services is a current strategy for companies in the shoe sector, in particular, for companies in the Felgueiras region. This region presents a large concentration of companies in this sector. The companies in the shoe industrial sector receive the orders from their clients and the production-planning manager needs to decide on the distribution of the different orders through the subcontracted factories (see Figure 1). After the orders have been produced, they are shipped to the clients.

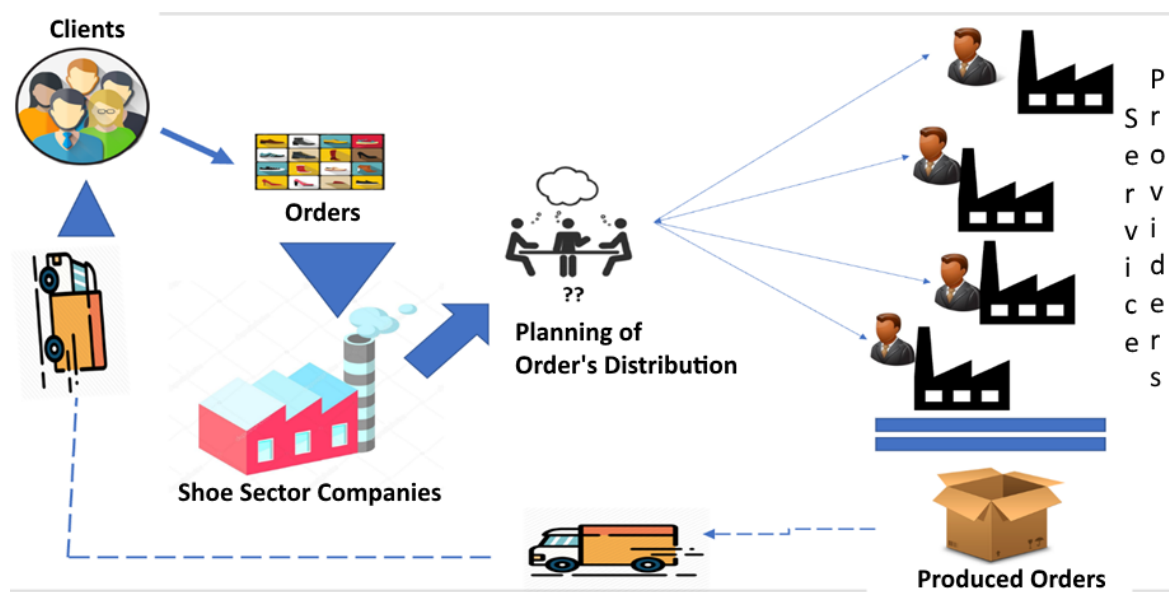


Figure 1. The outsourcing problem

2 The Case Study and Methodology

The shoe production process consists of two main phases: (1) Cut and Seam Service – in which each part of the shoe is produced; and (2) Assembly and Finishing – in which all the parts are put together and finished (polished and so on). Each of these two phases can be performed on the company's facilities or by subcontract companies – service providers – in their own factories.

The company considered in this study has contracts with nine service providers which different production capacities and costs. All together these nine factories have a production capacity of 11 350 pairs/week for the Cut and Seam Service. Only two factories have the ability for performing the Assembly and Finishing Service, with a total production capacity of 10 000 pairs/week. The order and the production is typically done in an one-week time horizon.

In the present work, this industrial problem is be treated as two assignment problems that are solved hierarchically. Several variations of the well-known assignment problem have been proposed, such as, problems concerning financial and time constraints, differentiation on workers qualifications, etc. (Pentico, 2007). For example, Caron et al. (1999) and Volgenant (2004) proposed several algorithms for solving assignment problems with qualification and seniority constraints, and task priorities.

A set of n orders and a set of m factories, that can perform each phase, are considered. Each factory has a known maximum production capacity and unitary cost. Therefore the parameters of the optimization problem are: $i \in \{1, \dots, n\}$ are the factories; $j \in \{1, \dots, m\}$ are the orders; c_{ij} are the cost of producing the order j in factory i ; p_i is the capacity of production of each factory i .

Since the raw materials, especially the leather, presents different patterns, each order cannot be separated for being produced in different factories. Thus, the decision variables are x (binary variables that takes the value 1 if order j is produced in factory i , and 0 otherwise).

The objective is the minimization of the production costs, therefore the objective function is the one presented in expression (1). The optimization problem of each phase is:

$$\min \sum_{i=1}^n \sum_{j=1}^m c_{ij}x_{ij} \quad (1)$$

Subject to

$$\sum_i x_{ij} = 1, \quad \forall j \in \{1, \dots, m\} \quad (2)$$

$$\sum_j p_i x_{ij} \leq 1 \quad \forall i \in \{1, \dots, n\} \quad (3)$$

Constraints (2) imposes that all orders j must be performed, while constraints (3) guaranty that the maximum capacity of each factory i is not be exceeded.

3 Computational Results

Table 1 presents, for the first phase (Cut and Seam Service), the maximum capacity of each factory (last column), the costs of production of each order in each factory, and the number of pairs on each order (last row), for an example week compose of 14 orders. Table 2 presents similar information but for the second phase (Assembly and Finishing). For confidentiality issues the names of the companies were omitted and code name was given. The costs are almost the same for all factories, however the factories production capacities are significantly different, ranging from 750 pair/week for factory R to 2 710 pair/week for factory J3.

Table 1. Cut and Seam Service

Factories	Cut and Seam Costs														Capacity
	Orders														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
A	1299.8	6375	2346	6840	700	250	336	275	1600	3040	3800	1425	5700	3800	800
S	1326.6	6000	2346	7200	700	250	336	275	1600	3040	3800	1425	5700	3800	800
V	1326.6	6000	2346	6840	700	250	336	275	1600	3040	3800	1425	5700	3800	1250
F	1326.6	6000	2346	6840	672	250	336	275	1600	3040	3800	1425	5700	3800	800
T	1326.6	6000	2346	6840	700	250	336	275	1600	3040	3800	1425	5700	3800	1200
R	1326.6	6000	2346	6840	700	250	336	275	1600	3040	3800	1425	5700	3800	750
J	1326.6	6000	2346	6840	700	250	336	275	1600	3040	3800	1425	5700	3800	1500
J3	1326.6	6000	2346	6840	700	250	336	275	1600	3040	3800	1425	5700	3800	2750
L	1326.6	6000	2346	6840	700	250	336	275	1600	3040	3800	1425	5700	3800	1500
# pairs	268	1500	690	1800	140	50	60	50	400	800	800	300	1200	800	

Table 2. Assembly and Finishing

Factories	Assembly and Finishing Costs														Capacity
	Orders														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
J	804	4500	2070	5400	420	150	180	150	1200	2400	2400	900	3600	2400	5000
S	871	4875	2242.5	5850	455	162.5	195	162.5	1300	2600	2600	975	3900	2600	5000
# pairs	268	1500	690	1800	140	50	60	50	400	800	800	300	1200	800	

For analyzing long term vs. short term planning, five cases were considered (see Figure 2). The first three cases (Case 1, Case 2 and Case 3) correspond to one-week orders (week 1, week 2 and week 3, respectively). While Case 4 corresponds to planning the orders of the first two week together, and finally, Case 5 corresponds to planning the orders of the three weeks all together.

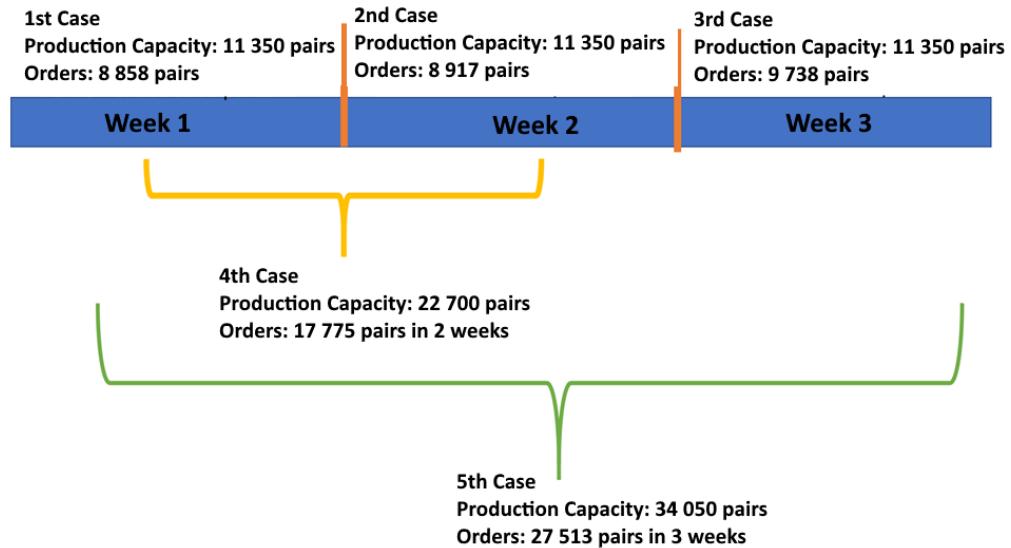


Figure 2. Cases that were considered

The optimization models of each of the two phases (see Section 2) were modelled using the AMPL language (Fourer, Gay & Kernighan, 1993) and solved using the Gurobi solver (Gurobi Optimization, 2018). For all five cases the optimal solution was found in a negligible computational time.

Table 3. Computational results and comparison

	1st Case - Week 1		2nd Case - Week 2		3rd Case - Week 3		4th Case - two weeks		5th Case - three weeks	
	Phase 1	Phase 2	Phase 1	Phase 2	Phase 1	Phase 2	Phase 1	Phase 2	Phase 1	Phase 2
Total number of pairs	8 858		8 917		9 738		17 775		27 513	
Total Cost using the proposed methodology	37 383.80 €	27 538.50 €	38 450.20 €	27 730.25 €	41 477.80 €	30 399.00 €	75 834.00 €	55 269.00 €	117 311.80 €	85 667.25 €
Total Company's real cost	38 173.60 €	27 999.00 €	39 698.90 €	27 974.25 €	42 277.60 €	30 839.00 €	77 872.50 €	55 973.25 €	120 150.10 €	86 812.25 €
Cost Reduction	789.80 €	460.50 €	1 248.70 €	244.00 €	799.80 €	440.00 €	2 038.50 €	704.25 €	2 838.30 €	1 145.00 €
Increase on profit per pair	0.14 €		0.17 €		0.13 €		0.15 €		0.14 €	
Savings for 1 year production (600 000 pairs)	84 689.55 €		100 439.61 €		76 389.40 €		92 582.28 €		86 867.30 €	

The number of pairs to produce each week is quite similar, varying between 8 858, for the first week, and 9738, on the third week. Per pair, for the first week, a reduction of approximately 0.14€ was obtained using the methodology proposed, while for the second and third weeks there was a reduction of 0.17€ and 0.13€ per pair, respectively. When considering a typical annually production of 600 000 pairs, the savings vary between 76 389.40€ and 100 439.61€ (see Table 3Table 1).

For the 4th case, where the productions for week 1 and week 2 are solved together, the savings per pair are of 0.15€, reaching an annual savings are of approximately 92 600€. Finally for the 5th case, for which the production of the three weeks is consider together, the savings per pair are of 0.14€, corresponding to an annual saving close to 87 000€. All the results are presented in Table 3.

3 Conclusions and Future Work

Production planning of shoe companies relies frequently on outsourcing services from other small companies, also named service suppliers. In fact, this is a widely common procedure for many industries in the shoe sector. In this scenario, the companies must select from a set of services suppliers with the objective of maximizing production while minimizing costs. The final aim of the present work is to develop a tool for assisting the production manager of a shoe company in the region of Felgueiras on the decisions of recurring to outsourcing for the production of orders in the two phases of shoe's production: Cut and Seam Service and Assembly and Finishing Service. Indeed, to the best of your knowledge there is no tool/software that accounts with all with the specifications of this problem in this particular sector.

In the current work a decision making model consisting on a hierarchical mathematical modelling of the two production phases is presented. Real instances provided by a company in the production of shoes are used and tested for different time horizons. The comparison between the firm's current strategy and the results obtained with the developed model are presented and compared. From the analysis of short vs. long term planning, the results show that, for the tested instances, weekly planning is the one that presents larger reductions on the costs. Furthermore, the results show a significant reduction on the cost when compare to the current procedure of the company. In future, further test will be performed using real data from typical cases in the company and an automatic tool will be developed for assisting the production manager.

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PARALLEL SESSION 9

ACTIVITY-BASED COSTING - A SYSTEMATIC LITERATURE REVIEW

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Extended Abstract

Abstract

Nowadays, in competitive environment and advanced production, cost management has become a critical survival activity for many companies. Cost information is critical to achieving a long-term competitive advantage. This type of information can come from the application of the ABC method, seen essentially as a strategic tool to support managers' decisions. Although, this method has as main disadvantage the effort and time required for its implementation, its benefits and impact on companies' performance make it one of the most investigated areas of management accounting, with numerous empirical studies already performed. This research revealed that it is the organizational factors that often determine the success of ABC.

Keywords: Activity-Based Costing; Management Accounting; ABC Success; Cost Driver

1 Introduction

The cost estimate of a product is a great challenge to companies, especially in the design and development stages. This activity has a crucial role in the financial success of companies whose importance has been increasing when competition grows. This competitive pressure spreads throughout the supply chain, requiring an accurate estimate of costs of all parties involved (Qian & Ben-Arieh, 2008). In this sense, the activity-based costing (ABC) system appears as a method that focuses on the calculation of costs incurred in the execution of activities to manufacture a product or provide a service. ABC is a useful method to allocate indirect costs in proportion to the activities carried out in a specific work, being able to provide more accurate cost estimates and, consequently, to overcome traditional costing systems (Haroun, 2015). ABC is considered a management tool for measuring the cost and performance of activities, resources and objects costs. In addition to this, ABC provides factual information about the expenses and profitability of products, services, customers and distribution channels, optimizing the decision-making process (Ming-ming & Dong-ping, 2012).

In the present research, the systematic review of the literature makes the synthesis of the most important study results more robust and comprehensive. In this sense, the purpose of this study is essentially to answer the following questions: "What is the most relevant literature on the application of ABC in companies?", "What are the following lines and most important variables in ABC implementation process? "

2. Systematic Literature Review

2.1 Activity-Based Costing (ABC)

Cooper and Kaplan (1988) discussed this method for the first time and presented the ABC system as a useful means to distribute indirect costs proportionally to the activities performed to manufacture a product. This proposal emerges from the fact that traditional costing systems have proved to be insufficient for the new reality of organizations, since the cost of the products was not calculated in the most correct way and could lead to wrong decisions. The information was not obtained on time and it was not suitable in terms of control (Kaplan, 1990).

Essentially, these systems were aimed at presenting financial results rather than management results. ABC is an effective alternative to traditional cost estimating techniques, providing more precise and management-oriented results (Haroun, 2015).

This method is the result of the verification of the diversity of indirect costs in a company of a heterogeneous nature, shared by more than one product and the consequence of several processes should not be attributed linearly to different products, services and other objects of cost (Datar & Gupta, 1994). The complexity inherent in modern manufacturing operations is the main cause of high indirect costs, and traditional methods does not have the capacity for capturing such costs (Kantor & Maital, 1999).

ABC systems are based on the basic assumption that products or services consume activities and activities consume resources, causing costs (Haroun, 2015). Companies produce products and provides services performing a number of activities. It is up to managers to make a survey of which activities consume the largest amount of resources and which, consequently, give rise to most of the costs. The direct costs of raw materials and labor are easily quantified, since their cost factor is the number of product units (Mijoc, Starcevic, & Mijoc, 2014). The ABC method is justified in companies involved in highly competitive industries, characterized by automation and, consequently, high indirect costs. These companies produce a high variety of products, in particular for the specific requirements of customers. As a result, it is necessary to use a large number of cost drivers to allocate indirect costs to cost objects to becoming profitable and gaining competitive advantage. The greatest difficulty pointed to this approach lies precisely in identifying the cost drivers for each activity (Mijoc et al., 2014).

Following this ideology, it is important to emphasize the concept of activity, which according to Senechal and Tahon (1997), is defined as a set of tasks or actions. According to these an activity must follow a set of requirements, namely, be performed by a person or team; appeal to a homogeneous set of skills; have a consistent behavior from the point of view of cost and performance; have effectively or potentially significance for the economic performance of the unit under analysis. Companies are formed by a set of activities that consume resources and that add or not value, whose primary objective is the continuous improvement and the satisfaction of the clients. The analysis of the value added by the activities expands the scope of the ABC method, in the sense that the method expands its focus of study of the activities that affect the flow or the quality of the processes, which goes beyond the simple calculation and distribution of costs (Mijoc et al., 2014).

It is also important to clarify the term cost driver, which corresponds to an activity used as the allocation base for a certain set of costs that actually causes the cost to occur (Werner & Xu, 2012). The ABC method is based on the treatment of general expenses, since it recognizes inducers of costs related to the activities and not the change in the production volume, as is the case with traditional cost systems (Werner & Xu, 2012). According to Haroun (2015), ABC allocates costs at four levels: (1) Unit-level costs, which are incurred once for each unit produced and are considered part of the total cost of the product. These costs include direct material, direct labor and some traceable machine costs; (2) Lot-level costs, which are incurred once for each batch of units produced and are allocated over the total number of lots. These costs are also considered part of the total cost of the product and include machine configuration, inspection, material handling and purchase or order costs of consumables; (3) Product or process costs, which include equipment maintenance and development costs. Similar to the previous costs, these are also considered part of the total cost of the product; (4) Organizational or structural costs, which include depreciation, insurance, administrative salaries and publicity. These costs are not related to the products and therefore must be deducted from the net revenue of the products. Therefore, it is possible to see that ABC recognizes various levels of cost, accumulates costs in related cost sets, and uses multiple cost drivers to assign costs to products or services.

ABC is a technique that has been introduced as an advanced cost accounting system, with the purpose of supporting companies to make more efficient use of their resources and produce critical information to decision-making process, helping to achieve better cost efficiency, competitiveness and performance in their business activities (Gosselin, 2006).

2.2 ABC critical success implementation factors

Previous literature provides detailed information about the technical instructions for the design and implementation of ABC. However, there are few considerations on human issues that should be taken into account in this process and that in most cases are sub evaluated by the companies (Argyris e Kaplan, 1994). Disparity of the results obtained with the implementation of the ABC method, gave special attention to the critical success factors. According Shields (1995), technical factors, alone, do not ensure the successful implementation of ABC. Despite its important contribution, obtaining all the potential benefits of this type of innovation only arises when coupled with the behavioral and organizational variables. According to the same author, these variables are related to the organizational culture of the company and with all the mechanisms inherent in the integration and diffusion of this same culture by all employees. Following are the behavioral and organizational factors that can dictate the level of success of the implementation of the ABC system.

2.2.1 Top management support

According to numerous studies (Chongruksut, 2002; Krumwiede, 1998; Liu & Pan, 2007; McGowan & Klammer, 1997; Shields, 1995), top management is considered the most important factor influencing the success of ABC. It is easily realized that the company's goals, competitive strategies and its resources can be influenced by top management support. Top management is a key of innovative tools to the evolution of the entire implementation process. In this particular case, top management has the ability and authority to direct the resources necessary to pursue the initiatives considered strategic for the company's sustainability, as well as to delineate, communicate and monitor the intended objectives (Shields, 1995). Therefore, by communicating the objectives and benefits of the system to all employees of the company, top management can develop the ideal environment to make changes (Fei & Isa, 2010). The employees understanding, approval and motivation directly influence their participation and performance in the implementation phase, thus eliminating potential forces of resistance, which could destabilize the integration of the ABC system into the company's organizational culture (Argyris & Kaplan, 1994).

2.2.2 ABC implementing responsibility

According to Cooper and Kaplan (1992), the implementation project leader is also a preponderant factor for ABC success. These authors argue that responsibility for ABC implementation should not belong exclusively to the accounting department because this is a process that involves all employees of the company and ABC can be implemented more effectively. This requires that both management and production professionals approve and promote ABC to its use can be a great success. Thus, employees of the different departments should join forces and work as a team, to develop a system that provide useful information to all parts of the company (Maelah & Ibrahim, 2006).

2.2.3 Professional qualification

An insufficient training in the design, implementation and application of the ABC represents a condition for failure. In order to ensure that employees have the necessary knowledge of the system and do not feel under stress during the process, the company should focus on appropriate training (Maelah & Ibrahim, 2006). The purpose of training is not only to educate employees about the objectives and results expected to be obtained from the ABC system (Shields, 1995), this is also assumed as a means of integration and legitimization by all actors in the adoption process, thus reducing any initiative of resistance. Ultimately, training can further promote confidence in ABC and the consequent continuous improvement of staff (Chongruksut, 2002).

2.2.4 Resources

The necessity to have all sufficient and appropriate resources is an condition for successful implementation. Chongruksut (2002) give emphasis on internal resources, which usually is about time and funds, as well as the employees' knowledge and understanding of how to implement the ABC method effectively. As mentioned earlier, the cost incurred during the planning and design of the ABC can cause costs of operation that exceeding benefits. In addition, the implementation of ABC is a time-consuming process and, as a rule, takes longer than expected (Krumwiede, 1998). Such facts can enhance the resistance of employees to adopt and implement ABC. However, this same resistance can be eliminated if the firm provides adequate resources throughout the process (Shields, 1995).

2.2.5 Linking ABC System to Performance

The lack of linkage between the ABC system and the performance system is directly related to the failure of the ABC application (McGowan & Klammer, 1997). It's normal that employees show interest in what determines their well-being. For this reason, they can be encouraged to implement ABC when there is a connection between this system and the performance and remuneration evaluation, especially those who feel that the ABC system can demonstrate its performance (Shields, 1995). Thus, employee behavior should be adjusted to the goals to maximize performance and behavior towards the ABC system (Fei e Isa, 2010). The same means that, in this scenario, employees will be more motivated to participate more actively in the implementation process, as well as improve the company's competitiveness and financial income.

2.2.6 Linking ABC System to Quality

ABC success is influenced by the degree to which it is correlated to competitive strategy. If a company is able to integrate ABC into the competitive strategy, it is more probably to implement ABC with success. The synergy created between this system and the various management tools linked to the strategy will increase both the company's competitive advantage and financial results (Shields, 1995). In this context, it is also important to highligh quality initiatives such as Total Quality Management (TQM) or Just In Time (JIT), which according to the same author it is necessary to combine the ABC system with these initiatives. The higher the degree of connection, the higher the level of ABC success. In same way, the synergy between both reinforce the integration of the system with other management tools and enhance the usefulness of the information for the strategic decision-making process (Krumwiede, 1998).

2.2.7 Clarity Goals

The lack of clarity goals of the system and the lack of alignment with the objectives of the company are considered as critical factors of failure of an implementation of ABC. McGowan e Klammer (1997) argue that if the objectives and benefits of ABC are clearly understood by all stakeholders, the implementation process will have a higher level of success. Concern about the objectivity, structure and consensus of the ABC principles, allows us to create a system to ensure the utility and efficiency of the information produced (Shields, 1995).

3. Conclusions

Considering all the information present in this study it is possible to conclude that the increasing volatility of the markets is the main cause for the companies use different dynamics in the management decisions. In this sense, the ABC method can respond to the challenges created by competitors, customers and even the sustainability of the business. This method allows to generate more precise and useful information to the management, mainly for a better decision making. In conclusion, it can be said that ABC is a comprehensive management system that is generally used as a tool for planning and control. This system provides important information about cost management that traditional methods do not provide. In view of its many benefits, therefore, companies must work together to overcome the system limitations, in particular, costs and inherent time-consuming process. One of the ways to safeguard a successful implementation of ABC is to pay attention to organizational factors.

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PARALLEL SESSION 9

ACTIVITY BASED COSTING AND PRODUCT-MIX PROBLEM: A PRELIMINAR STUDY

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Extended Abstract

Abstract

This work presents an analysis of the existent literature in order to determine the most appropriate methodologies for the implementation process of an activity-based costing (ABC) system and the development of a corresponding quantitative model. Several studies on management accounting are analyzed, with the aim of understanding which costing systems is most suitable for a company in the footwear components production sector. The results of the present study point that ABC is the most appropriate costs system. Therefore, in order to determine the optimal product mix for the company's production process a mixed integer programming (MIP) model, based on ABC, will be developed in future work.

Keywords: Management Accounting; Activity-Based Costing; Mixed Integer Programming; Product Mix; Optimization;

1 Introduction

With the growth of the economy and the increase of globalization, the business world is becoming more and more competitive. Companies are being forced to seek new management and control tools for improving their activities operation and products or services quality. New technologies and production diversity have emerged to fill large-scale production. However, all these changes have an influence on the companies' cost structure. In fact, costs on research and development, i.e. indirect costs, are increasing while direct costs are decreasing (Wanderley & Cullen, 2013). In face of this reality, management accounting plays a vital role on the survival, development and growth of companies, since it affects the managers' behavior and directs them to the implementation of a strategy.

Manager accounting provides key data for the planning and control managers. Also, implementing costing systems allows to calculate the total cost of a product or service (Horngren, Foster, & Datar, 2000). Firstly, the traditional costing systems have emerged. These systems were developed in environments in which labor force and raw materials predominated in the products costs. This situation led to the overload of the costs on companies' production departments, in detriment of the other companies' departments. Therefore, these types of costing systems have become obsolete, since they do not provide reliable information due to a high changes in the cost structure. However, in order overcome the lack of information in traditional systems, contemporary costing systems are emerging, as it is the case with ABC. This is a costing method able of overcoming the limitations of traditional costing systems, mainly the arbitrary and imprecise allocation of indirect costs.

Considering the above mentioned, the main objective of this study is to analyze the existing literature in order to determine the most appropriate methodologies in the process of implementing a costing system. The goal is to apply the most adequate quantitative model in future. Thus, it is intend to analyze different studies on management accounting, in order to perceive the most adequate costing system for a company dedicated to the production of footwear components. The objective of this study is to determine the most appropriate quantitative methodology to implement the best costing system. This research is of great importance for improving the existent scarce literature and for developing a support decision tool to be used by the company.

2 Literature Review

2.1 Management Accounting

In recent decades, there have been high changes in organizations related to the importance, nature and applications of management accounting in organizations (Wanderley & Cullen, 2013). Accounting has become playing a proactive role in the processes of change through the articulation of organizational goals and priorities during this process, promoting the importance of certain costs that undermine the company's profit and making them less important. Because of that management accounting has played an essential role in the decision-making process, giving managers information with higher levels of quality in order to face the fast changing surrounding environment (Horngren et al., 2000).

The International Federation of Accountants (IFAC) establishes four main stages in the evolution of management accounting (Abdel-kader & Luther, 2006). In the first, before 1950, it is described as a technical activity necessary for the pursuit of organizational objectives, and focus essentially on the determination of products cost. In this period, organizational management was more oriented to internal affairs, such as, production capacity, using only budgets and data provided by financial accounting in the decision-making process.

From 1950 to 1965, management accounting became a tool whose main purpose was to provide useful information in order to support planning and management control. Therefore, the second stage of management accounting, described as a management activity in a staff role, started to include the support of all elements through the use of decision analysis and responsibility accounting technologies (Abdel-kader & Luther, 2006).

The increasing global competition, supported by rapid technological developments in the industrial sector and the oil price shock, due to the global recession felt between 1970 and 1980, threatened already established markets, giving rise to the third stage. At this stage, management accounting has introduced new management and production techniques that allowed the reduction of resources waste, making it crucial to develop appropriate information to support the decision-making of any employee.

Finally, in the mid-1990s, IFAC presented the fourth stage as "creation of value through effective resources use". At this stage, the global industry continued to record unprecedented technological advances and information processing, thus requiring managers to develop technologies that examined drivers of customer value, shareholder value, and organizational innovation (Abdel-kader & Luther, 2006). Management accounting, is also designated as cost or analytical accounting. However, Drury (2012) and Horngren et al. (2000) defend that these designations correspond in fact to different accounting fields. Analytical accounting consists essentially in the valuation of internal business phenomena, and is concerned with the registration of charges and revenues per function, per activity and per product. For several decades this type of accounting was named Cost Accounting (Walther & Skousen, 2009). The evolution of Analytical Accounting to Management Accounting has occurred in order to respond to the increased demand for information. The changes in Management Accounting practices were essential for organizations to stop using controls with defined objectives and standards based solely on financial data, and to start resorting to Management Control Systems, which include other mechanisms such as evaluation efficiency and effectiveness of organizational processes (Chenhall & Moers, 2015). According to the American Accounting Association (1972), Management Accounting consists of the application of appropriate techniques and concepts in the processing of historical data with the objective of assisting the management in the creation of decision-making plans. It includes methods and concepts needed for effective planning, to develop alternatives through performance assessment and interpretation. According to Drury (2012), Management Accounting should be able to generate relevant information, not only for managers to make better decisions, but also for planning, control and continuous improvement.

2.2. Activity-Based Costing

Johnson & Kaplan (1987) are pointed as responsible for the popularity of the ABC system. However, there is no consensus concerning the responsible for its creation. Cooper & Kaplan (1988), define ABC as a system designed to provide more accurate information about production and support activities, and product costs, so that management can focus its attention on the products and processes with the most leverage for increasing profits. According to Hicks (1992), ABC identifies the causal relationships between different cost activities and the final products, and thus assigns the cost of indirect activities to different products. However, traditional cost sharing is limited to direct manufacturing processes that involve predominantly labor and material costs. In this case, overhead costs are distributed by direct cost sources as a percentage of overhead costs. Also, Kaplan & Anderson (2007) argue that ABC has emerged with the objective of correcting serious deficiencies in traditional costing systems, defining it as a management tool that attributes costs to products, services or customers based on resources consumed by the various activities. The same authors state that this approach assumes that the products or services of a company are the result of the performance of the activities and that the activities consume resources that incur in costs. Thus, ABC is considered as a new approach to management accounting to correctly determine the cost of products and services (Chan, 1993).

2.3. Optimization Models for Management Accounting

Grondskis & Sapkauskiene (2011) consider that one of the most important tasks in an organization is the definition of an optimal production plan. Although the authors identify the generation of the optimal production plan as the best-known task in mathematical programming, since it identifies the production level and volume in order to maximize profit, it is important to adopt a cost accounting system to ensure the reliability of the information for an effective decision-making process. From literature, it is possible to verify that there is a lack of consensus concerning the most appropriate optimization methodology for the information generated by management accounting. However, product mix problem, scheduling and the relation between ABC and Theory of Constraints (TOC) is addressed in several studies such as (Chang, 2017; Grondskis & Sapkauskiene, 2015; Jafarnejad, 2016; Malik & Sullivan, 1995; Pinedo, 2007).

Several authors identify product mix decision models as the most related optimization models to management accounting, more specifically, to ABC. Zhuang & Chang (2017) state that product mix optimization is essential for managers that need to deal with high changes in markets and with production deficits. The lack of production capacities signify that the company must be able to allocate the resources used in the production of different products in order to maximize the expected profit (Zhuang & Chang, 2017). These authors present a mixed integer programming (MIP) model, developed for determining the mix of products of a production process with limited production resources, based on an ABC system and introduces the new concept of time-driven activity-based costing (TDABC). According to the same authors, TDABC distributes the costs into: (1) per-unit time cost – total expense for a department divided by the total working hours, and (2) time usage of each activity – unit time for an activity multiplied by the quantity of that activity.

Malik & Sullivan (1995) also present product mix problem as a classical application of linear programming. In order to determine which products should be manufactured, the problem is formulated with the objective of determining the maximum profit of the mix of product to be produced, subject to several resources constraints. The coefficients of the objective function can be obtained by estimating the margin contribution and the estimation of absolute profit for each product unit. Furthermore, the estimated contribution margin can be applied in two situations: (1) in the direct cost system, where the fixed costs are not considered in the product unit cost, and (2) on short term planning, where the fixed costs are not relevant to the decision. The absolute profit of each unit is used for the long term planning, with the calculation of the total product cost (Malik & Sullivan, 1995). In contrast, scheduling is defined by Pinedo (2007) as the decision-making process that consists on the allocation of resources to tasks in specific time periods, optimizing one or more objectives, that may vary according to the necessities of the production system.

Finally, there are several examples in literature that relate ABC and TOC. Jafarnejad (2016) analyzed the relation between these methodologies in order to maximize profit. A MIP model, based on the information provided by the ABC system, was developed and compared to TOC based on operational cost with different due dates. Chang (2017) claims that TOC is able to identify existence limitation on the company and can help to deal with production bottlenecks and to obtain the best mix of products in short term. However, this approach considers raw material and direct labor force as variable costs, while manufacturing overhead and administrative/marketing costs are fixed. With the final objective of maximizing the effective profit, TOC determine the production order of different products, delimiting the output per unit of resources and placing the main emphasis on limited production resources. Accordingly, Grondskis & Sapkauskiene (2011) have studied the contribution of merging ABC and TOC in an optimization process. They claim that ABC partial resolves issues in traditional costing accounting, visualizing the production as a system of several correlated activities and using various bases of cost allocation, increasing the reliability of the distribution of costs. In contrast, TOC are oriented for profit gaining by eliminating bottlenecks, and therefore does not ensure reliability of provided information for companies with a vast range and high factory burden. However, the authors recognize that combining TOC and linear programming can improve the solutions of production planning.

3 Research Methodologies

Several authors suggest that ABC is most suitable for industrial companies (e.g. Cotton, Jackman, & Brown, (2003); Howell & Soucy (1987); J Innes, Mitchell, & Cobb (1992); John Innes & Norris (1997); Kaplan (1986); Plossl (1990); Rotch (1990)). Following this line, in the present study, the ABC methodology is implemented in a company dedicated to the production of footwear components, more precisely the production of injected soles. Currently the company support its decisions on information given by a traditional costing system. For implementing the ABC, the methodology proposed by Roztocki, Porter, Thomas, & Needy (2004) is used, for an easy transition from the traditional costing system. This consists of eight simple stages, based on the two phases identified Cooper (1987).

In a first phase, costs are assigned by cost groups within an activity center, based on a cost driver. In the second phase, costs are allocated from the cost groups for a product based on the consumption of the product activities. Thus, the procedure proposed by Roztocki, Porter, Thomas, & Needy (2004) consists on investigating the indirect costs. The first five stages support the research process of the data needed for the first phase identified by Cooper (1987), and stages 6, 7 and 8 correspond to the second phase.

The first and second stage consist on examining the main cost categories and identifying the main activities of the company. The third stage, is related to the activities that contribute to each expense and the expense-activity-dependence (EAD) matrix is developed. The cost categories are represented in the matrix columns and the activities on the rows. According to the model, if activity *i* contributes to cost of category *j*, a check mark is placed in cell (*i*, *j*). The fourth stage consists of replacing, in the EAD matrix, the check marks with proportions (Roztocki, et al, 2004). It is possible to use three levels of data precision: (1) Educated Guess – consists on the creation of a team composed of administrators, managers and operational employees associated with cost centers, will provide an estimate of the costs proportions allocated in both steps of the ABC methodology. The level of accuracy depends on the combination and diversity of the team and its knowledge of the cost center; (2) Systematic Appraisal – consists on using an analytic hierarchical process (AHP), a structural modeling tool that incorporates the qualitative structuring and the corresponding weights (Saaty, 1982); (3) Collection of real data – consists of timely and qualified data collection that is analyzed using statistical methods.

On the next stage, equation (1) is used in order to obtain the monetary value of each activity *i*, by summing the product of the monetary value of the cost category *j* and the corresponding proportion in the EAD matrix, i.e.:

$$TCA(i) = \sum_{j=1}^M Expense(j) \times EAD(i,j) \quad (1)$$

where TCA (*i*) is the monetary cost of activity *i*, *M* represents the number of costs, Expense (*j*) is the value of category *j*, and EAD (*i*,*j*) is the *i*,*j* entrance of the EAD matrix.

Next, the activity-product-dependence (APD) matrix is created. This matrix relates the activities consumed by each product (the columns) and the products (the rows), i.e. if product *i* consumes activity *j*, a check mark is placed in the cell (*i*,*j*). In stage seven it is used the same procedure used in stage four, but now to the APD matrix. Finally, equation (2) is applied, and the monetary value of each product is obtained, by the summation of the multiplication of the monetary value of activity *j* and the proportion on the APD matrix:

$$OCP(i) = \sum_{j=1}^N TCA(j) \times APD(i,j) \quad (2)$$

where OCP (*i*) is the production cost of product *i*, *N* represents the number of activities and APD (*i*,*j*) is the *i*,*j* entrance of the APD matrix.

With the implementation of these eight phases in the company under study, it is expected to obtain results similar to those obtained by Roztocki, et al (2004), i.e. it is expected that the company will be able to identify the most profitable customers and products in which to concentrate a fraction of the longer time.

In order to answer to the main objective of this project, in a second part of this work a MIP will be developed for determining the optimal product mix. Gass (2006) states that mathematical programming problems are related to the efficient use of limited resources to meet the intended objectives. These problems are characterized by a large number of solutions that satisfy the basic conditions of each problem. Choosing a specific solution as the best solution to a problem depends on the overall purpose that is implicit in the problem description. Grondskis & Sapkauskiene (2011) consider that TOC, in contrast with ABC, does not guarantee reliability of the information provided with a large manufacturing load. Therefore, the literature supports the use of MIP for determining the optimal product mix, determining the standard costs and marginal costs of different products in a multi-product manufacturing environment (Malik & Sullivan, 1995).

In the present work, the optimal product mix will be obtained by developing a model based on the methodology proposed by Zhuang & Chang (2017). To do so, after the ABC implementation, it will be necessary to apply the TDABC for further comparison. Similarly to Zhuang & Chang (2017), a MIP will be developed based on the ABC and TDABC information, in order to compare the results obtained in both methodologies and determine which is the most appropriate.

As decisions variable the following will be used: X_i - quantity of the i -th type product to be manufactured; B_i - quantity of batches to produce the i -th type product; S_i - the number of shipments to ship the i -th product; z_i - a binary variable which is 1 if product i is to be produced and 0 otherwise. In order to obtain the product mix that maximizes the company's profit, it is assumed that material supply is always sufficient, while machine capacity and number of workers are limited. It is required that several parameters are known, namely: (1) general parameters - which include machine and work capacities for each department, time required in each activity, cost of workers and machines for each department and activity; (2) per-product-type parameters - which include sales price, produced quantity per production batch, product quantity per shipping, product demand, raw material cost, working and machine hours per product and per department. The objective is profit maximization which is defined as a difference between revenues and all the costs inherent to the activities.

4 Conclusions

Management accounting is a fundamental tool for the development of different control techniques in an organization. In order to answer the purpose of the present work, an exhaustive analysis of the existent literature was performed. Several authors claim that management accounting is an essential toll for supporting decision-making. However, several companies still adopt a traditional costing system, although this does not meet to the currently required information. The literature review also allowed inferring the different existent costing systems, in order to answer the different economies requirements. Literature points that ABC system is the most suitable for a company with a high factory load. Furthermore, it was also possible to conclude that in order to obtain information pertinent to the organization, it is essential to combine an ABC costing system with an optimization methodology in order to improve its production process. Thus, literature points to the mix product model as the most suitable for the characteristics of the company under study. As a future work, it is expected to implement the selected methodologies in the company under study that currently support its decision-making process on a traditional costing system, not reaching the levels of information essential for its success, and thus achieving the better results.

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4th
HELIX'19

28th June

PARALLEL SESSION 10

THE BILATERAL RELATION BETWEEN UNIVERSITY – INDUSTRY COMMUNICATION AND GOVERNMENT - DOES DEVELOPMENT LEVEL MATTER?

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Extended Abstract

Abstract

In recent years the role of innovation at micro and macro level increases across the globe. Countries aspire to increase innovation within both public and private sector for benefit of all. In that scope, among others, the Triple Helix Model emphasizes the role of collaboration of stakeholders from academia, industry and government for effective innovation. Despite efforts of both theoreticians and practitioners to encourage university-industry communication, a broad number of barriers leads to highly limited level of university-industry communication. Existing literature argues that, among others, the tendency to transfer tools from developed to less developed countries obstructs possibilities to reach full potential for university-industry communication. As no empirical study was identified validating such a hypothesis, our study tests using multiple regression modeling whether U-I communication has different impact on growth and whether the impact of specific governmental measures on the level of U-I communication differs between countries at different development level. It provides pointers regarding importance of different policy measures for university-industry communication depending on the level of development.

Keywords: University-industry communication, open innovation, policy measures, economic development

1 Introduction

While innovation level is a result of innovation generated within academic and industrial sectors, the strong dependence of both from national (NIS) and regional (RIS) innovation systems is commonly recognised. Among others, the Triple Helix Model (THM) postulates the need for engagement of academic, industrial and governmental stakeholders for effective innovation (Etzkowitz and Leydesdorff, 2000). In that scope, literature recognises possible impact of government on university-industry (U-I) communication. The postulated impact, through policy incentives, assistance programs for industry oriented research, matching services or support infrastructures, may significantly decrease U-I communication barriers, positively influence collaborative innovation and allow creation of integrated communities.

Recognition for government role in creating proper environment for open innovation leads governments to invest in supporting tools and structures (Cooke, 2002; Peng, Ferreira and Zheng, 2017). Successful models stimulating U-I communication are often transferred between regions. However, some authors argue that transfer of governmental measures from developed to developing countries is not an effective solution (Lee and Yoo, 2007; Salem and Amjed, 2008). Ineffectiveness of such investments was associated with different needs of economic environment, culture, knowledge and lack of properly developed NIS that could facilitate capitalisation on the invested resources (Macleod, McFarlane, and Davis, 1997; Salem and Amjed, 2008; Sandberg et al. 2015). From the other side, in less developed countries, universities contribution into economic regeneration of community was suggested to be especially high (Macleod et al., 1997; Rad, Seyedesfahani, and Jalilvand, 2015).

Many authors postulate differences in effectiveness of specific governmental tools between regions at different development level and their possible impact on economic growth. However, no empirical study was identified in the literature testing such hypotheses. To fill the gap, our study tests whether U-I communication has different impact on growth and whether the impact of specific governmental measures on the level of U-I communication differs between countries at different development level.

2 Theoretical framework

Nowadays, level and quality of U-I communication is commonly suggested to impact economic development and the life quality of citizens by impacting the pool of available innovation, quality of information and knowledge at hand (Howarth and Monasterolo, 2016). Governments across the globe recognising relevance of U-I communication for competitiveness of their economies, implement support for U-I communication in their strategies. Common policies take forms of (Alshehri et al., 2016; Peng, Ferreira and Zheng 2017):

- Schemes and incentives to support U-I communication,
- U-I relations enabling legal frameworks,
- Establishment of research centers or service providers for facilitation to U-I communication,
- Providing support for clusters, science and technology parks (STPs), innovation centers and business incubators infrastructures.

Despite the common recognition for U-I communication importance, the literature suggests that progress in the level and quality of U-I communication is limited and unsatisfactory on global scale (Rad, Seyedesfahani and Jalilvand 2015; Peng, Ferreira and Zheng 2017). That puts in question significance of governmental engagement and current measures and suggests the need for better understanding of the existing models and their impact. Literature postulates far reaching benefits of U-I communication for economies (Salem and Amjed, 2008). Due to existing barriers, U-I communication is however commonly obstructed (Gera, 2012). Authors commonly differ regarding expected level of governmental impact on U-I communication. Some authors recognise government mission of fostering and coordinating U-I relations (Lee and Yoo, 2007). Others postulate its secondary role related with coordination of NIS (Langford, Langford and Burch, 1997; Lee and Yoo, 2007). Unfortunately up till now, despite recognition for enabling role of government in U-I communication, specific dynamics in THM scope are poorly theorized and clear guidance for decision-makers is not available (Sandberg et al., 2015). Among identified in academic literature success factors for enhancing U-I communication, authors especially point political will to improve U-I collaborative environment and intelligent strategies and frameworks (Salem and Amjed 2008; Sandberg et al., 2015). Maximising public benefits from knowledge by enhancing U-I communication will require strongly articulated and clearly defined policies protecting intellectual property and companies trade secrets from one side, and autonomy and freedom of university scientists from the other (Welsh et al., 2008; Sandberg et al., 2015; Alshehri et al., 2016). Policies should cultivate harmonious environment fostering communication and open innovation between various entities by bridging organisational barriers and making U-I relationships a win-win situation. (Alshehri et al., 2016; Peng, Ferreira, Zheng 2017).

Those governmental efforts are often challenged by culture, goals and knowledge gaps (Sandberg et al., 2015). A clear answer how to overcome the challenges does not rise from the existing body of literature. Empirical studies show that depending on factors such as market characteristics policies may lead to different results, even in similar situations (Lee and Yoo, 2007; Salem and Amjed, 2008). I.e. studies of less developed countries suggest that policy measures with proven positive impact in developed countries will not provide similar result elsewhere. Due to stronger barriers such as capital limitations of industry that do not possess resources to fund industry oriented R&D at universities or lack of sufficient knowledge and absorptive capacity, impact of policy measures if not adapted to local conditions may differ strongly (Rad, Seyedesfahani and Jalilvand, 2015). In such conditions, authors accord key role in stimulating U-I communication, and industry development itself, to universities, underlining however the need for governmental incentives for universities to engage in communication with industry (Yuthavong et al., 1993; Macleod, McFarlane, and Davis, 1997; Rad, Seyedesfahani and Jalilvand, 2015). That suggests that:

H1 – impact of policies and mechanisms on U-I communication differs between countries at different development level.

Literature suggests that typical for developed countries policy concerns such as intellectual property rights, concerns related with researchers pressure on scientific communication are not as significant in less developed countries (Welsh et al., 2008). Meanwhile, they in the first place need to overcome the extensive cultural and knowledge gap and deal with over-concentration of knowledge within academia (Rad, Seyedesfahani and Jalilvand 2015; Peng, Ferreira, Zheng 2017). From the other side, egalitarian character of knowledge can result in highly limited size and competitiveness of industries and therefore the overall economy. Effective engagement of universities with industry may in that scope have stronger impact on stimulating economic development. The effect can be obtained by transfer of knowledge, encouraging entrepreneurship or providing university resources to industry. From that we hypothesise that:

H2 – the U-I communication will have stronger impact on economic growth in less developed countries.

3 Method and Data

To reach the research objectives within the study based on World Economic Forum Global Competitiveness Index, International Monetary Fund, UNESCO and Global Innovation Index data sets we analysed factors of GDP and U-I communication using multivariate regression modelling. The total sample covered 151 countries. Existing data was grouped according to methodology of United Nations into three categories – developed economies, developing economies excluding Least Developed Countries (LDCs) and LDCs (<https://www.un.org/development/desa/dpad/least-developed-country-category.html>). Due to limited range of currently available data, as conducting a valid panel study was not possible, to increase opportunity for providing valuable conclusions two periods of time following the WEF Global Competitiveness Index data were analysed, 2014-2015 and 2017-2018.

4 Models and results

Following postulated within academic literature relations, eight factors of economic development expressed in GDP growth were analysed together with U-I communication as potential predictors of economic growth. Due to commonly nonlinear character of the relationship, required transformations into logarithms and polynomials were made to validate the relations. Despite in depth analysis of possible statistical issues, in none of the countries group U-I communication proxy by the level of U-I collaboration did show significant impact on economic growth. The impact of U-I communication was insignificant already at the stage of correlation analysis proving further regressions counterproductive.

Hence, despite the postulated importance of U-I communication for economic development and innovativeness of countries, the study does not show significant impact of U-I communication on economic development. The effect can be however accredited to strongly limited effective U-I communication which across the globe did not reached the critical mass to obtain postulated benefits from U-I communication. That underlines global character of the need for encouraging objective-oriented U-I communication in innovation area. The outcome empirically confirms that the common in academic literature assumption that progress in the level and quality of U-I communication in innovation scope is up till now insignificant and that the progress is unsatisfactory globally, including countries with strong focus on targeted policies. It underlines the need for improving the extent and/or quality of U-I communication to realistically generate the postulated in literature positive impact of U-I communication on economic development (Rad, Seyedesfahani and Jalilvand, 2015; Peng, Ferreira and Zheng, 2017).

Therefore, the second part of the study focused on analysing factors of U-I communication and the differences between countries on different development level. The analysis focused on specific elements of innovation system resulting from public measures and overall R&D environment:

$E(\text{UI collaboration}) = f(\text{Transparency of policymaking, Availability of scientists and engineers, Availability of financial services, Burden of government regulation, Business Sophistication, Company R\&D spending, Ease of access to loans, Effect of taxation on incentives to invest, Efficiency of legal framework in challenging regulations, Extent of staff training, Intellectual property protection, Quality of overall infrastructure, Quality of scientific research institutions, Quality of the education system, Tertiary education enrolment gross \%})$.

Multiple regression model (see Table 1) within the group of developed countries covering in the data set 37 countries resulting from the stepwise procedure identified 3 significant for U-I collaboration factors, the quality of research institutions, private R&D investments and bureaucratic burden, as predictors of U-I communication. While the importance of the factors was confirmed in both analysed periods, 2014-2015 results suggested stronger impact of research institutions quality over private R&D investments, while 2017-2018 results show the primary role of private R&D investments for U-I collaboration within the developed countries group (see Table 1). While bureaucratic burden is not commonly associated with positive impact, the study suggests that a well-designed administrative mechanisms with strong portfolio of innovation policies within NIS may have enabling character for U-I communication in innovation area (Gann, Wang and Hawkins, 1998; Freitas and Tunzelman, 2008; Coccia, 2009).

For the group of developing countries covering, in the period 2014-2015, data for 55 countries, the procedure resulted in a complex model including seven independent variables as factors influencing U-I communication. The estimation results show high significant and positive impact of quality of research institutions ($B1=.498$), private R&D investments ($B2=.486$) and staff training ($B3=.251$) on U-I communication. Transparency of policy making ($B4=.480$) and ease of access to loans ($B5=.140$) also show positive and significant impact on improving U-I communication. Meanwhile, bureaucratic burden ($B6=-.256$) and education quality ($B7=-.108$) were associated with negative impact on U-I communication. While the negative impact of bureaucratic burden is generally supported by literature on U-I communication barriers (Plewa et al., 2013), the negative relation between quality of education and U-I communication is not often recognised. Especially the opposite impact to Quality of research institution and education quality can raise doubts regarding the model. However, the negative relation, especially in this specific country group may suggest that with the increased quality of education the private sector have higher innovation capacity and the dependence from universities in providing innovation decreases.

After the initial model analysis and taking into account study objectives we increased the required significance level. As a result, as quality of education did not meet the criterion of 0.05 confidence level, second regression with stepwise procedure on the limited variables list was conducted. The procedure resulted in second model limited to three significant independent variables. The model presented in Table 1 shows strong positive impact of quality of research institutions ($B1=.451$), private R&D investments ($B2=.358$) and staff training ($B3=.293$) on U-I communication in developing countries.

The same procedure within data for 53 developing countries available for 2017-2018 period confirmed positive impact of quality of research institutions ($B1=.254$) together with private R&D investments ($B2=.631$) on U-I collaboration. Those were followed by ease of access to loans ($B3=.184$). Together with primary role of private investments in R&D in that specific period rather than quality of research organisations it may suggest that in that particular group of countries the role of crucial for initiation sphere moved between those two periods from university to business sphere. That may result from increasing awareness of private sector of benefits from U-I communication in the scope of innovation and their increasing capacity to benefit from it, but may also be related with specifics of economic cycle.

Meanwhile, following results of estimation presented in Table 1, in LDCs in the period 2014-2015, the U-I communication was significantly associated only with the quality of research institutions ($B1=.811$). The strong positive impact can suggest the postulated in literature crucial role of research institutions as the engine for U-I communication and enabling knowledge transfer to private sector (Macleod et al., 1997) due to lack of proper innovation system in place. The estimation for 2017-2018 resulted in model with three independent variables – private R&D investments $B1=.938$ and staff training $B2=.583$ with positive impact and negative impact of bureaucratic burden $B3=-.256$.

The comparison of results of conducted regressions and their analyses show that different development levels are not only related with different level of policy measures impact, but that different policies are of relevance for U-I communication in countries at different level of development, confirming the H1. Due to the lack of significant impact of U-I communication on economic growth in none of the defined countries groups, there is no base for conclusive validation of H2. Hence, there is no evidence that U-I communication will have stronger impact on economic growth in less developed countries.

Table 1. Models of U-I communications

Model	Period	Adj. R Square	Included variables				
			Constant	Quality of research institutions	Bureaucratic burden	Private R&D investments	
1	2014-2015	0.942	Constant	Quality of research institutions	Bureaucratic burden	Private R&D investments	
			Coefficients (B)	-0.513	0.727	0.259	0.137
			Significance [t(sig)]	-2.048 (.049)	9.969 (.000)	4.711 (.000)	2.220 (.034)
2	2017-2018	0.948	Constant	Private R&D investments	Quality of research institutions	Bureaucratic burden	
			Coefficients (B)	-0.787	0.477	0.452	0.205
			Significance [t(sig)]	-2.746 (.011)	4.932 (.000)	4.077 (.000)	2.668 (.013)
3	2014-2015	0.892	Constant	Quality of research institutions	Private R&D investments	Staff Training	
			Coefficients (B)	-0.361	0.451	0.358	0.293
			Significance [t(sig)]	-1.317 (.195)	5.076 (.000)	3.233 (.002)	2.838 (.007)
4	2017-2018	0.916	Constant	Private R&D investments	Quality of research institutions	Easiness of access to loans	
			Coefficients (B)	-0.323	0.631	0.254	0.184
			Significance [t(sig)]	-1.508 (.139)	8.408 (.000)	3.781 (.000)	3.635 (.001)
5	2014-2015	0.795	Constant	Quality of research institutions			
			Coefficients (B)	0.565	0.811		
			Significance [t(sig)]	2.634 (.013)	11.173 (.000)		
6	2017-2018	0.835	Constant	Private R&D investments	Staff training	Bureaucratic burden	
			Coefficients (B)	-0.864	0.938	0.583	-0.256
			Significance [t(sig)]	-2.093 (.048)	5.987 (.000)	4.117 (.000)	-2.268 (.033)

Note. Final models of U-I communication obtained under the .05 confidence level condition

4 Conclusions

Conducted within the study macro-data analysis shows that there is no significant impact of U-I communication on economic development across group of countries on different development levels. While literature broadly suggests relevant impact of U-I communication on economic development, the effect was not confirmed. That can suggest that countries on all levels of development struggle with reaching significant level and quality of U-I communication that would effectively translate into economic development. From the other side the study shows different impact of policy related factors on U-I communication in countries at different development level. That empirically confirms postulated by some authors need for strategies adapted to needs of different regions rather than transfer of best practices from most developed countries (Salem and Amjed, 2008). However, a number of policy measures was suggested to be of transversal importance. U-I communication was especially positively influenced by the quality of research institutions and private R&D investments, underlining the need for creating efficient strategies to increase research institutions quality and incentives for private R&D investments to reach a level of U-I communication that could significantly impact innovativeness and economic development at macro level.

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PARALLEL SESSION 10

FORMATION OF THE COMMODITY ASSORTMENT OF THE COMPANY BASED ON ITS OPTIMALITY AND EFFICIENCY

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Extended Abstract

Abstract

The purpose of this research is to show the importance of conducting an assessment of the optimality and efficiency of the product range of any enterprise. Also, as one of the main goals, it is an opportunity to understand whether the product range of the investigated company is aimed at satisfying the needs of consumers, so it should be market-oriented. The results show that all assortment of positions of the enterprise under study should be upgraded in accordance with the potential needs of the market or even withdraw from this market. And it is then that the company may be targeting some leading position in the geographic market of activities. Summing up all information it can say about the importance of assessing the efficiency and optimality of the product range of any enterprise, as an important tool for maintaining the competitiveness of the enterprise, which also understands its profitability.

Keywords: assortment policy, product range of the enterprise, methods of managerial analysis, strategy.

1 Introduction

Currently, companies use various management tools to expand market activity. The formation and implementation of the assortment policy will not only determine the position of the company in the market among competitors but also provide opportunities for maximum profit. Therefore, the issue of the company's product range, as proves it (Flores, Berbeglia & Hentenryck, 2019) does not lose relevance and need research among other managerial problems. The issue of management of assortment requires analysis and evaluation of activity of the enterprise, its competitors, methods of estimation of assortment policy, which will be the basis of justification of directions of its improvement.

The importance and at the same time problematics of determining the most optimal and efficient range of goods, as the work stresses; Bozulenko (2015) determines the market, and therefore weighted assortment policy of enterprises is a guarantee of forming a balanced of the company, which will strengthen the market positions of the enterprise, profit and attract the consumer's goodwill. Therefore, for each enterprise, forming the optimum range is an important strategic component of its commercial activity and competitiveness. According to Bihdan (2014), this consumer and manufacturer optimality is created on the basis of realization of certain groups of features from the point of view of which the given assortment of goods can satisfy the needs of consumers.

2 Literature Review

According to Kharchenko and Pavlenko (2017) the assortment strategy is a subsystem of marketing strategy, aimed at analysing, developing and making strategic decisions on nomenclature, assortment, the volume of sale of goods, quality, the sale of goods in certain markets. The most well-thought assortment strategy for the enterprise not only allows to optimize the process of updating offers on as well as the management of the enterprise as a unique indicator of action, able to correct the current decisions.

In the market economy, the level of specialization of societies is determined by the number of segments they serve. These segments are often defined by the enterprise as a «strategic zone of management» (SZM). Determining the amount of data in strategic areas of business for enterprises is of great importance, as it is their correlation and possibilities of the enterprise will be responsible for optimality of its commodity assortment and efficiency of assortment policy company. The main factors defining the SZM are the needs and products that meet them. In determining the SZM it is necessary to estimate the quantitative and qualitative characteristics of which include: the capacity of the SZM, which is characterized by the volume of current demand; dynamic characteristics of demand; competitive position of the company in the segment; expected sales in current and prospective period; distribution and sales features; actual and forecast values of profit, profitability and other indicators. Formation of the assortment policy of the enterprise is a very intensive process, which includes a number of stages. Given in the work Didenko and Savelyev (2015) the algorithm of management of assortment policy of the enterprise is formed with consideration of well-known managerial approaches, among which are the process, systematic and situational.

After the goods are released to the market, all further actions on management should be based on tracing the stages of the life cycle of each of the types of products. This is explained by the fact that a certain product has the individual duration of this cycle and the decision-making process must take into account the stage on which there are products at this time. On the one hand, if the growth phase is observed, the product will bring the company's income and leadership may not take action on market promotion. In turn, at the saturation phase, as is known, the need or application of a complex of measures to the creation of conditions for the further promotion of goods on the market due to its improvement and stimulation of sales, or gradual output of the current assortment. That is why it raises the importance of the question of a constant estimation of optimality and ephedrine of a commodity range, as the instruments of control of competitiveness of any enterprise.

3 Research Methodologies

In this work, the main method of estimating the optimality and efficiency of a commodity assortment based on analysed research sources is chosen "Markon matrix".

The most fully given method of evaluation of the efficient formation of the commodity assortment is most fully described in the work of Cuban (2010). This method uses simple analysis techniques, ensuring clarity of results. Unlike other matrix methods, this matrix is constructed using a much larger number of parameters, including: the number of products sold (Q), product unit price (p), average replacement costs per unit (c), total gross margin (MCA), and gross margin per unit of production (MCU), percentage of gross margin in the total amount of income from the sale (MCI).

Thus, in this method, three parameters are used:

- General gross Margin (MCA):

$$MCA = P * Q - C * Q \quad [1]$$

where P – product unit price;

Q – Quantity of sold products;

C – Average replacement costs per unit of products.

- Gross margin per unit of products (MCU):

$$MCU = MCA/Q \quad [2]$$

- Gross margin percentage (MCI):

$$MCI = MCA/(Q*P) \quad [3]$$

Future, the research results are images of the "Markon method" explains that after the calculations of each parameter, each assortment position is assigned to binary codes (0 or 1), depending on whether positively or negatively differs from the average weighted value. The assortment portfolio values a certain option of a separate product position. Each assortment position receives two blocks of binary codes: a block of parameters Q, P, C and a block of parameters of MSA, MCU, MCI. The assortment positions having the same series of these parameters are characterized by the same position on the market and belong to one marketing group.

In general, the matrix can be divided into four zones depending on the level of margin of the assortment position and the specific weight of them in the commodity portfolio of the enterprise. Each zone of the matrix has its name and the corresponding characteristic (Table 1, with possible assortment groups).

Table 1. Example of the "Markon matrix"

Q,P,C	111	110	101	100	011	010	001	000
A,U,I								
111		WG				BD		
110								
101								
100			RG					
011						WD		
010								
001								
000			BH				D	

Source: Author's own elaboration based on "Markon method".

The final representation of the final appearance of this matrix when using it in the research is given in the research Abramovich (2017a). That is, we get a dynamic Markon matrix, the essence of which lies in the fact that it can be used as a pattern for analysis earlier and in the form of deviations from the previous indicators by the Markon method (Table 2).

Table 2. An example of a dynamic matrix Markon

Q, P, C	+++	++-	+ - +	+ --	- ++	- + -	- - +	---
A, U, I								
+++								
++-		Winning				Exploited		
+ - +								
+ --								
- ++								
- + -		Bandages				Programmable		
- - +								

Source: Author's own elaboration

The dynamic method of Markon splits the assortment into zones in which separate goods are divided into winning goods, «respond» too invested funds in them), exploited (provide funds for financing of other directions), supporting (goods in which resources are involved, do not give a positive result for the company) and the lost (lose interest of consumers, their production is economically justified). Exploring this method of analysis of the commodity range Cuban (2010) species thereof as certain advantages and disadvantages. It is possible to include the possibility of analysing the efficiency of production and marketing activity in the sphere of assortment policy and other directions on a set of parameters, and this comparison occurs simultaneously. The Markon method allows conducting a joint analysis of internal and external factors forming the assortment policy of the enterprise, which is very important for marketing and strategic control. Instead, Abramovich (2017b) in his research proves that the dynamic Markon method allows you to track any changes that have not yet become explicit for other methods of analysing the assortment policy.

Thus, according to the chosen method on the basis of the "Markon matrix" is planned to investigate the efficiency of a commodity assortment in terms of analysis of its basic indicators, which characterize its logistic process. In the process of analysis, it is planned to use the dynamic method of the "Markon matrix", because this type of matrix can be used as a picture for analysis of previous periods.

4 Discussion and Results

Thus, according to the chosen method based on the "Markon matrix" on the example of one of the Ukrainian enterprises is planned to investigate the efficiency of a commodity assortment in terms of analysis of its basic indicators, which characterize its logistic process. Estimation of efficiency and optimality of commodity range was held on the example of LLC «Kovelskiy hlibokombinat» on the basis of data 2014-2018. On the basis of the data on the financial activity of the company Markon parameters were determined for each assortment and depending on the assortment position they were assigned binary codes (0 or 1) depending on the position of the assortment position with a high margin of total profitability and low (Table 3 – Table 5).

Table 3. Characteristics of areas of the assortment analysis for 2014.

Q,P,C A,U,I	111	110	101	100	011	010	001	000
110								
101			1				2	
100								
011								
010			-				3,4	
001								
000								

Source: Author's own elaboration.

Table 4. Characteristics of areas of the assortment analysis for 2015-2017.

Q,P,C A,U,I	111	110	101	100	011	010	001	000
110								
101			1,2				-	
100								
011								
010			-				3,4	
001								
000								

Source: Author's own elaboration.

Table 5. Characteristics of areas of the assortment analysis for 2018. Q,

P,C A,U,I	111	110	101	100	011	010	001	000
110								
101			-				2	
100								
011								
010			1				3,4	
001								
000								

Source: Author's own elaboration.

Thus, in accordance with the conducted analysis one can observe that 1 and 2 groups are steadily given the potential profit of LLC "Kovelskiy hlĭbokombinat". Only that changes this amount of sales in the profit of the enterprise (Tables 6-9).

Table 6. The "Markon matrix" analysis of assortment groups for 2014, 2017.

Q,P,C A,U,I	111	110	101	100	011	010	001	000
111		WG				BD		
110						2		
101			1					
100			RG					
011						4		
010						WD		
001							3	
000			BH					D

Source: Author's own elaboration.

According to the analysis of the situation with strategic zones the same as in 2014, only there are changes in positioning 2 groups and changing the position of "Blue dwarfs" to "White giants", that is, this year significantly increased profitability and demand for this product.

Table 7. The "Markon matrix" analysis of assortment groups for 2015.

Q, P, C	111	110	101	100	011	010	001	000
A, U, I								
111		2				BD		
110		WG						
101			RG					
100			1					
011						WD		
010						4		
001							3	
000			BH					D

Source: Author's own elaboration.

Table 8. The "Markon matrix" analysis of assortment groups for 2016.

Q, P, C	111	110	101	100	011	010	001	000
A, U, I								
111		WG				BD		
110				2				
101			1					
100			RG					
011					4	WD		
010								
001							3	
000			BH					D

Source: Author's own elaboration.

Table 9. The "Markon matrix" analysis of assortment groups for 2018.

Q, P, C	111	110	101	100	011	010	001	000
A, U, I								
111		WG				BD		
110								
101							1	
100			RG					
011						WD		
010		2					4	
001							3	
000			BH					D

Source: Author's own elaboration.

For 2018, there is a shift in all assortment groups, only 3 groups remain stably unprofitable in all years of research. Other assortment groups do not have the charm to any particular product group, but 1 group, for example, is characterized by falling demand, 2 - falling of this profitability. For the 4 assortment group, this group is characterized by the direction of a transition to the strategic zone "Descents", indicating the decline of this group. On the basis of this we build a dynamic "Markon matrix" of commodity assortment of LLC "Kovelskiy hlibokombinat" in "Table 10".

Table 10. The Dynamic "matrix of Markon" analysis of commodity assortment of LLC "Kovelskiy hlibokombinat" in terms of 2014–2018.

Q, P, C	111	110	101	100	011	010	001	000
A, U, I								
111		WG				BD		
110						2		
101			1					
100			RG					
011						4		
010						WD		
001							3	
000			BH					D

Source: Author's own elaboration.

Thus, according to the received data, we can observe that assortment group, as "Bread and bakery of short-term storage" during the analysed period brings a large share of profit to the enterprise and occupy the zone "Red giants", although in 2018 the approach to the zone "Blue dwarfs", which can be connected with decreasing demand for products is observed. As for "Cakes and confectionery bakery other with the addition of sweetened substances" this product during the analysed period was at the stage of growth and occupied the zone «Blue dwarfs». However, at the time it was observed to the zone "Red dwarfs", which is connected with increasing demand for this product and increase of profit from the sale of this product. "Crispy bread, crackers, toast and the products like fried" during the analysed period is an outsider at this enterprise and occupies the zone "Descents". As for "Sweet biscuits, including elephant, except partially or fully covered with chocolate or other, mixtures containing cocoa", the occupies a zone of White dwarfs, indicating that this product has a reserve of profitability, but does not bring significant revenues and gross margin. And in accordance with data in 2018, there is approaching of this assortment group to the zone "Descents".

5 Conclusions

Thus, according to the analysis of estimation of efficiency of the commodity assortment of LLC "Kovelskiy hlibokombinat" by means of the chosen method of "Markon matrix", this work will help to understand that the efficiency and optimality of this commodity range are on the not rather satisfactory level. Also, it will show that most of the products of this enterprise are at the stage of decline. More or less profitable are the two of the four assortment groups of LLC "Kovelskiy hlibokombinat". The other two assortment groups are at the stage of decline and are not profitable for the enterprise. However, their exclusion from a commodity range is due to the enterprise only losses. So, as for example, such assortment group as "Crunchy bread, rusks, toast and items like fried" is made of recycled products, which gives waste from the first two types or for example, as for "Bread and products of bakery short-term storage" comes in the form of the return of the nuns spoiled and impossibility to implement this product. Basically, if analysing the name of the assortment position of this enterprise it is possible to understand that in the main enterprise does not carry out production of products that meet market demands and is innovative competitive. For example, this assortment group, such as "Bread and bakery of short-term storage", which must be the basis for the collection of profits from activity for the most part of the product has the traditional assortment of bread. And such assortment group as "Cakes and confectionery bakery other with the addition of sweeteners" is characterized by not the entirely modern design of products, which is known also is of great importance for the potential consumer of this product on the market of bread and bakery products of Ukraine. Also, in the formation of assortment policy of the given enterprise, it is necessary to take into account the latest trends of consumer preferences in this market, which can also improve the optimality and efficiency of commodity assortment of LLC "Kovelskiy hlibokombinat". In general, the value of this work is that in the process of its activities, each enterprise should carry out the same assessment. Because we know that any market is very changeable. Today you are a market leader, and tomorrow no. Therefore, the question of the formation of the product range in accordance with the needs of potential consumers and the cyclical assessment of this optimality is quite acute.

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PARALLEL SESSION 10

TECHNOLOGICAL TRANSFER AMONG QUADRUPLE HELIX ACTORS IN THE CONTEXT OF ITS RIS3 STRATEGY

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Extended Abstract

Abstract

The purpose of this paper is to assess quadruple helix stakeholders' perception on the implementation of the smart specialization strategy (RIS3) in the North of Portugal, besides analysing technology transfer (TT) activities between 2014 and 2017. For the achievement of this goal, a qualitative methodology was followed through semi-structured interviews applied to regional actors of the eight priority domains of RIS3 North of Portugal. Data analysis was performed using Iramuteq software. Our results suggest that regional stakeholder' motivation to engage in TT were essentially in line with what has been found in other contexts and stakeholders' perception of the fitness of the RIS3 defined for their region does not match with the RIS3 defined by the policy makers. Our results contribute to (1) bridge the lack of studies focusing on university TT involving QH stakeholders and to (2) identify the real perception of QH actors on the RIS3 process.

Keywords: Technology Transfer, Triple helix, Quadruple helix and RIS3.

1 Introduction

Regions differ in terms of their socioeconomic context and less advanced regions are commonly seen as less innovative than more developed ones (Rodríguez-Pose & Wilkie, 2019). However, regional differences have become a risk to economic development and political stability in Europe (Iammarino, Rodríguez-Pose & Storper, 2018). Therefore, smart specialisation strategy (RIS3) focuses on existing regional strengths (Krammer, 2017) since the RIS3 idea is that any region, especially the less developed and in transition, create capabilities, taking into account their specificities to gain competitive advantages in (at least) some niche markets (Foray, 2014). This requires the development of regional strategies to gain competitive advantages (Arancegui, Querejeta & Montero, 2011). Consequently, the objective of RIS3 is to generate new options or new specialties to diversify the structures of the regional economy (Foray, 2014).

The involvement of different stakeholder has always been on the heart of the Cohesion Policy, because those actors' own abilities and knowledge that can be useful (Carayannis & Rakhmatullin, 2014). RIS3 is not an exception and should include quadruple helix (QH) actors right from the beginning (Foray & Rainoldi, 2013) since QH interactions are required for sustainable growth (Afonso, Monteiro & Thompson, 2012).

The political economy gave way to a knowledge-based economy (Leydesdorff, 2012) and it is broadly accepted that knowledge is the base for value creation (Del Giudice, Carayannis & Maggioni, 2017). Knowledge and technology transfer (TT) are indispensable to guarantee competitiveness and growth (Sinell, Iffländer & Muschner, 2018), however TT constitutes one of the major challenges in the global economy (Kumar, Luthra, Haleem, Mangla & Garg, 2015). Previous studies concerning TT were very useful for policy makers (Kumar et al., 2015), yet limited studies to date have explored the changing role of universities where they are expected to engage in co-creational knowledge transfer and exchange with QH stakeholders within an open innovation context (Miller, McAdam, Moffett, Alexander & Puthusserry 2018). Consequently, there is a lack of studies focusing on university TT involving QH stakeholders. Thus, we aim to contribute to bridge this research gap, therefore this paper will analyze TT activities among QH actors between 2014 and 2017 in the context of its RIS3 strategy.

2 Literature Review

2.1 Triple Helix (TH) and Quadruple Helix (QH)

Triple helix (TH) and QH model assume that innovation results from different helixes actors' interactions (Cavallini, Soldi, Friedl & Volpe, 2016). Concerning the TH model, the theory was developed by Etzkowitz and Leydesdorff (Mégnybêto, 2018; Mroczkowski & Miller, 2017; Van Horne & Dutot, 2017) and presents a spiral model of innovation where the intertwining of university-industry-government (Carayannis & Campbell, 2009; Geoghegan, O'Kane & Fitzgerald, 2015) are the key promoters of innovation, economic growth and social development within a knowledge-based economy (Mégnybêto, 2018; Etzkowitz & Zhou, 2017; Etzkowitz, 2003). The distinct possibilities of relations among the helixes can promote different paths for economic growth and social change (Etzkowitz & Leydesdorff, 2000), besides this model offers: (1) an analytical framework to comprehend the contribution for generating innovation by each of the helixes, (2) the possibility to delineate place-based strategies (Vac & Fitiu, 2017), (3) methodologies to analyse local strengths and weaknesses among the three stakeholders involved and (4) the opportunity to fill gaps in the relationships between them to develop a successful innovation strategy (Etzkowitz & Zhou, 2017), since if one helix is missing another should take its part (Balzer & Askonas, 2016). Each of the helixes has a specific role, namely, universities provide new knowledge and technology, the industry is responsible for the production and the government ensures stability and regulation for the effective development of interactions (Van Horne & Dutot, 2017; Etzkowitz, 2003). Some studies argue for the insufficiency of only three helixes for long-term growth (Kimatu, 2016; Colapinto & Porlezza, 2012) and, therefore, Carayannis and Campbell (2009) suggested adding a fourth helix. Thus, the QH concepts encompass the TH and consists of an extension of the TH (Carayannis & Rakhmatullin, 2014; Carayannis & Campbell, 2010) by adding a fourth helix called "media-based and culture-based public" (Carayannis & Campbell, 2009, p. 206). The addition of the fourth helix comprehends innovation in the twenty-first century (Cavallini et al., 2016), namely non-traditional innovation paths and open innovation where all actors create new services and products (Cavallini et al., 2016).

2.2 *RIS3*

RIS3 was developed by the Knowledge for Growth Group to respond to the transatlantic productivity gap (Virkkala, Mäenpää & Mariussen, 2017), based on identifying existing local strengths and assets (Krammer, 2017). Accordingly to the European Commission (2012) RIS3 is an integrated, place-based economic transformation agenda that (1) focus on policy support and investments on priorities, (2) build on regional strengths and competitive advantages, (3) favours private investments, (4) stimulates stakeholders involvement and (5) should include monitoring and evaluation systems. This novel strategy became an ex-ante condition required for member states and regions to access to European funds (Capello & Kroll, 2016; Krammer, 2017), therefore regions and member states should identify their strengths and assets for forward specialization on certain priorities domains (Kroll, Böke, Schiller, & Stahlecker, 2016). The establishment of priorities domains occurred through the entrepreneurial discovery process (EDP) (Cavallini et al., 2016) which is what distinguish RIS3 from former strategies (OECD, 2013) and can be describes as “an effective tool to maximise the innovation, entrepreneurial and growth potential of every territory” (Rodriguez-Pose & Wilkie, 2017, p.45).

The European Commission acknowledges the potential of the QH concept and adopted it for the preparation and implementation of RIS3 strategy (Carayannis and Rakhmatullin, 2014; European Commission, 2012). Thus, within the RIS3 context, TH is no longer enough and the involvement of the fourth helix actors should represent citizens needs and the demand perspective to provide better research and development (R&D) commercialization's conditions and boost the innovation potential (Cavallini et al., 2016), which is necessary for an open and user-oriented innovation policy (Carayannis and Rakhmatullin, 2014).

2.3 *Technology Transfer (TT)*

Regarding TT, it consists of a structured, usually multi-directional exchange of skills, methods, scientific findings, results and facilities among actors or institutions (Sinell et al., 2018; Berawi, 2016) that is a bilateral process between a source and a recipient (Battistella et al., 2015) where ideas end up on the marketplace (Vac and Fitiu, 2017). TT is of great utility for organizational survival and for gaining competitive advantage over other organizations/supply chains (Kumar et al., 2015).

In fact, TT, within the QH model context , should comprise user-oriented innovation models (Del Giudice et al., 2017) where the fourth helix assists to innovation jointly with TH stakeholders and can, even, serve as a favoured source of knowledge of societal needs (Cavallini et al., 2016). Thus, unavailable knowledge can be included into the innovation process (Cavallini et al., 2016).

3 **Research Methodologies**

Regarding methodology, primary data was collected through 32 semi-structured interviews with stakeholders belonging to the four helixes (research centres (RC), enterprises, clusters, government actors and associations) chosen according to the criteria identified on Table 1. The interviews were conducted face-to-face or via Skype, between April to October of 2018, and recorded with the respondents' permission. The qualitative data were processed via Bardins (1977) content analysis using the free software Iramuteq (Interface for Multidimensional Analysis of Texts and Questionnaires). After the transcription of the interviews, the organization of the transcripts was made according to the standards required by Iramuteq.

The organizations were selected as described below:

Table 1. Criteria for the selection of stakeholders to be interviewed.

1 st RC	Research area registered at FCT in one of the eight domains of RIS3 and graded as Very Good or above.
2 nd Clusters/ Associations	Representative of the domain and located in RIS3 North.
3 rd Firms	These are firms suggested by RC, clusters or associations that are involved in knowledge transfer, innovation and technology in the respective domain and in RIS3 North.
4 th Government	These are names suggested by RC, clusters or associations that are involved in knowledge transfer, innovation and technology in the respective domain and in RIS3 North.

4 Discussion and Results

Results indicated that the motivations of regional stakeholder for engagement in TT were essentially in line with what has been found in other contexts. Regarding the advantages to collaborate with higher education institutions (HEI's), the development of skills, the guarantee of qualified human resources and the development of innovation potential are the most relevant. These results refer to activities related to the three functions that are assigned to HEI's (Secundo, De Beer, Schutte & Passiante, 2017). It should be highlighted that specialization and cost sharing assumed to be the least relevant advantage for the respondents. The proximity to the market and the need to obtain financing were the motivation for RC to foster linkages with the industry, in line with studies carried out before (Pinto & Fernández-Esquinas, 2018; Cartaxo & Godinho, 2017; Marinelli & Elena-Perez, 2017). It was also stressed responsibility felt by RC to contribute to competitive development of business, which will ultimately contribute to regional development. Through the literature review, we have verified that RIS3 is no more than a process that's aims to define investment priorities in areas where a critical mass exists for regional economic and social development. Empirical results of the investigation suggest that the stakeholders' perception of the fitness of the RIS3 defined for their region does not match with the RIS3 defined by the policy makers. Since, notwithstanding all stakeholders consider existing potential in the identified areas of action, there were complaints about how the EDP and prioritisation of investments have happened in practice. These conclusions are aligned with Komninos, Musyck and Reid (2014) who argued that the EDP, sometimes, occurs between consultants and a limited number of stakeholders and overlap with other studies, showing a small involvement of companies and society (e.g., Lundström & Mäenpää, 2017; Gheorghiu, Uyerra, Scerri, Castillo & Harper, 2014). We can, thus, conclude that the difficulty of the EDP lies in the lack of information on how to implement it, as verified in Del Castillo Hermosa, Elorduy and Eguía (2015) and how to integrate the various regional actors (Estensoro & Larrea, 2016). Our results also suggest that many actors would made changes or add other scopes to RIS3 North, which is aligned with Marques and Morgan (2018) when studying challenges of implementing innovation policy in less advanced regions.

5 Conclusions

Through the literature review, we have verified that RIS3 is no more than a process that's aims to define investment priorities in areas where a critical mass exists for regional economic and social development. RIS3 should consist of a continuous process to allow the adjustment of the priorities defined in light of the registered evolution (Marinelli & Elena-Perez, 2017) and accordingly to Rodríguez-Pose and Wilkie (2017) all actors play roles within the EDP and all roles are equally important. Therefore, results suggest that public organizations could seize this opportunity to find a way to encourage regional actors to work effectively together for the well-being of the region, noting that interviewed expressed this interest.

This study contributes to a better understanding of TT among regional stakeholders, highlighting the importance of collaborations among them for regional growth and development. Furthermore, we provide an overview of the perception and awareness of stakeholders in the North of Portugal about RIS3, besides the necessity for ongoing evaluation of the priority domains and involvement of all QH stakeholders.

Funding

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PARALLEL SESSION 10

RESHAPING "AKIS" TO SUPPORT AGRO- ECOLOGICAL TRANSITIONS IN AGRICULTURAL LANDSCAPES: THE CASE OF DOURO VALLEY WINESCAPE

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Extended Abstract

Objectives

The pressure of consumers and the society of developed countries for a more sustainable food regime is leading to sustainability transitions in farming systems. It is acknowledged that sustainability transitions in food and farming systems can be coupled (Meynard et al., 2017). On the other hand, that plurality of transitions is possible at the farming landscape level build on different sustainability transition paradigms (Levidow, 2015) and on diverse agri-innovations (Pigford, 2018). Agroecology has been envisaged in the last decades mainly as an alternative farming style, suitable to familiar households and alternative agricultures, such as organic, biodynamic, or care farms among other. In addition, often agroecology has been related to an ideological discourse that associates mainstream commercial conventional agriculture to the neoliberal political agenda. The 'alternative' character of agroecology reflected on its marginalisation from the neo-productivism policy agendas (Levidow, 2015) that looked for high productivity sustainable farming systems, what has raised attention to the paradigm of sustainable intensification (Godfray et al., 2010). Agroecology has been as well neglected by the agricultural research driven for a long lasting techno-scientific agenda, that more recently is being reshaped by the life-sciences bioeconomy paradigm (Levidow, 2015). This paper explores the opposite trends, by showing how agro-ecological transitions are taking place in farming landscapes dominated by commercial-oriented farms strongly anchored to globalised food value chains. That is the case of the Alto Douro Valley, in Portugal, which landscape is dominated by mountainous viticulture traditionally associated to the production of Porto wine, but where high quality wines with DOC (controlled origin denomination) have emerged and consolidate in the last 15 years as the major product in the region business models due to its potential for market differentiation and value capture. The high quality wine sector is expanding worldwide by addressing new trends in food systems, where an increasingly number of sophisticated gourmet consumers values more and more the extrinsic quality attributes, such as the foods and drinks local of origin, its history and culture, along with authenticity, healthiness and sustainability. This is a quality paradigm lined up with the agroecology agenda for bioeconomy (Levidow, 2015). Hence, the research agenda needs to address it. This paper contributes to that by showing how regional AKIS (Agricultural Knowledge and Innovation Systems) need to be reshaped to support sustainability transitions in agricultural landscapes build on agro-ecological innovation.

This paper explores the opposite trends, by showing how agro-ecological transitions are taking place in farming landscapes dominated by commercial-oriented farms strongly anchored to globalised food value chains. That is the case of the Alto Douro Valley, in Portugal, which landscape is dominated by mountainous viticulture traditionally associated to the production of Porto wine, but where high quality wines with DOC (controlled origin denomination) have emerged and consolidate in the last 15 years as the major product in the region business models due to its potential for market differentiation and value capture. The high quality wine sector is expanding worldwide by addressing new trends in food systems, where an increasingly number of sophisticated gourmet consumers values more and more the extrinsic quality attributes, such as the foods and drinks local of origin, its history and culture, along with authenticity, healthiness and sustainability. This is a quality paradigm lined up with the agroecology agenda for bioeconomy (Levidow, 2015). Hence, the research agenda needs to address it. This paper contributes to that by showing how regional AKIS (Agricultural Knowledge and Innovation Systems) need to be reshaped to support sustainability transitions in agricultural landscapes build on agro-ecological innovation

Theoretical Framework

The paper builds on a conceptual and empirical framework developed under the AgriLink H2020 project (Agricultural Knowledge: Linking farmers, advisors and researchers to boost innovation). It combines a meso and micro-level analysis of the agricultural knowledge and innovation systems (AKIS) to understand how different innovations are uptake by farmers. This paper addresses the case study of the Alto Douro Valley region with a focus on its vine-growers and their transitions (or not) towards a biodiversity-based vine-growing, build on agro-ecological knowledge system.

Methods and data

A sample of 45 vine-growers was selected by snowball technique that have been interviewed with mixed quali-quantitative interviews. In addition semi-structured interviews were conducted with other relevant AKIS actors. The data collection took place in 2018.

Results and conclusions

The data analysis highlighted three main findings: 1) that the transition from a conventional farming system to a biodiversity-based is highly knowledge demanding; 2) that this novel agro-ecological knowledge is co-created by farmers together with other actors, such as scientists and R&D oriented advisory organisations and technicians; 3) that its creation requires long term periods entailing experimentation and a long-term assessment phase. As a consequence, agro-ecological knowledge underpinning biodiversity-based wine growing is difficult to store and to disseminate, and excludes small winegrowers that cannot afford the risks entailed by the transition. Hence the AKIS need to be reshaped to respond to the creation and dissemination of agro-ecological knowledge to support sector and cross-sector agroecological transitions in agriculture. However paradigms to assign public funding to innovation in agricultural sector need to encompass long term experimentation processes and to acknowledge eco-functional intensification paradigm as key for. Economic competitiveness and sustainability of rural landscape relying on the supply of foods and drinks valued by its integral quality, shaped by the sustainability of its local origin.

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Key words: Agroecology, AKIS, Bioeconomy, Biodiversity-based agriculture, Ecofunctional intensification, Alto Douro Valley.

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PARALLEL SESSION 11

FAMILY FIRMS MANAGEMENT AND PERFORMANCE: A SYSTEMATIC LITERATURE REVIEW

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Extended Abstract

Abstract

In this study a systematic approach it was used to perform the literature review and a mapping of the most relevant research studies, making use of a rigorous research protocol and refinement criteria, defining specific stages of research execution and analysis of the literature based on scientific articles published in the ISI Web of Science database, using the keywords "Family Firms Management and Performance" and "Family Business Management and Performance". The identified articles, related to Family Business Management and Performance, are located on a time basis between 1997 and 2018. The review of the literature shows that Family Business Management and Performance is a topic of great importance for analysis and there are more and more research studies that approach it on the most diverse perspectives.

Keywords: Family Firms Management; Family Business Management; Economic; Business; Management; Performance

1 Introduction

The research on Family Business (FB) has been growing over time and continues to be an important research topic (De Massis, Chua, & Chrisman, 2008). A number of studies published in indexed journals have taken into account various phenomena present in family businesses such as succession (Chua, Chrisman, & Sharma, 2003; Handler, 1994; Lansberg & Astrachan, 1994) strategic management (Chrisman, Chua, & Sharma, 2005), corporate governance (Danny Miller, Le Breton-Miller, Lester, & Cannella Jr, 2007), altruism (Schulze, Lubatkin, Dino, & Buchholtz, 2001), among others. Nowadays, FB have a prominent place in the world's economies, that we can count between 65% and 80% of global companies, whether small, medium or large (Ward & Dolan, 1998). FB phenomenon represents about 90% of the global business (Aldrich & Cliff, 2003). For example, about 44% of publicly traded companies in the major European economies are controlled by families (Faccio & Lang, 2002). In the United States, about 33 percent of the S & P 500 companies are controlled by families (R. C. Anderson & Reeb, 2003). Because FB phenomenon is very interesting and important for the evolution of knowledge in this area, the research questions that motivated this study were: "What is the most relevant literature related to the existence of FB, its characteristics and functioning?" and "What are the main topics covered in the FB literature?".

The main objective of this research is to study one of the most interesting and least studied areas of the Human and Social Sciences, the Family Business Management and Performance (FBMP) and to contribute to a better knowledge of this subject and, consequently, the literature related to it, both with regard to respect to the scientific community as well as to the professionals of the area. In what concerns research, Business Management in the area of Family Business has been underdeveloped, and few scientific articles have carried out simultaneously a systematic literature review and mapping of the same, on the FBMP.

2 Literature Review

2.1 Family Business

2.1.1 Definition of Family Business

As previously mentioned, there is no unanimously accepted definition of what a FB is, however, the Portuguese Association of Family Business (PAFB) defines the FB as "Family Enterprises are those in which a Family has control, in terms of naming management, and some of its members participate and work in the company. "

Another definition for FB is that the company is directly linked to the family, and that binding must happen for at least two generations. This link can be verified at various moments in the life of the company, for example: succession, company values, composition of the board of directors, among others (Donnelley, 1964). Ussman, (2004) defines in his book Family Business as "those in which ownership (although partial) and control are in the hands of a group joined by kinship relations (and may also be one or more families forming such a group). It is precisely this deep relationship between a family and a company that makes the second a Family Enterprise, yet other definitions can also be found. According to (Romano, Tanewski, & Smyrniotis, 2001) several authors have found and enumerated definitions of FB (Sharma, Chrisman, & Chua, 1997). Kepner, (1983) introduces a concept of Family Enterprise resulting from the joining of two subsystems: the family and the enterprise, where each subsystem has its rules, structure, values and visions.

According (Paulo, 2009) each person involved in a family business can be positioned in one of the seven sectors of the subsystems: (1) Family members who do not have capital or work in the company; (2) Shareholders who are not members of the family but do not work in the company; (3) Employees who are not family members; (4) Family members who have shares in the company but who do not work in the company; (5) Shareholders who are not members of the family, but who work in the company; (6) Family members who work in the company, but have no shares; (7) Family members who have actions and work in the company. This system is useful for identifying sources of interpersonal conflict, dilemmas, properties, and family boundaries. In the face of all the uncertainty about the concept of FB, the European Union was obliged to look into the matter by creating a committee of experts with the objective of discussing the specific aspects of FB. In a report published on 4 December 2009, the Commission of the European Union announced to the Member States the adoption of a definition of FB. As the model of the three dimensions points out, one of the main conclusions of the work developed by this Committee is that the definition of FB must include three elements: family, property and business.

2.1.2. Types and characteristics of Family Business

(Lethbridge, 1997) highlights three types of family businesses: (1) the traditional one that corresponds to the stereotype of these organizations, where capital is closed, there is little administrative and financial transparency and the complete dominion over the business of the family; (2) Hybrid: where capital is opened, however, the family still controls the company, with greater transparency and participation in the management of non-family professionals; (3) Family Influence: Most of the stock is in the hands of the market, but the family, even removed from management, maintains a strategic influence through a significant share of capital. In turn, (Gersick, Gersick, Davis, Hampton, & Lansberg, 1997) present another form of classification: (1) Controlling Owner: The ownership of the company is controlled by an owner or a couple; (2) Brothers partnership: shareholder control belongs to one or more brothers, usually in the second generation; (3) Consortium of cousins: company control is exercised by cousins, usually present in the third generation.

FB is the result of the interrelationship between two originally distinct systems, the family and the company, with specific objectives and rules to each system, which all too often leads to conflicts, confusion, complexity, disorder (Ussman, 2004). Several authors (Table 1) addressed the characteristics of FB. Regarding the strong relationship established between the company and its founder (Oliveira, 2010), it is stated that the FB arise from the will, resilience and audacity of the entrepreneur normally supported by the family. (Moreira Jr & Neto, 2000) affirm that the FB are characterized as entities where the centralization of power emerges. (Donnelley, 1964) states that family culture is identified with FB culture. (Ricca, 1998) refers the importance of values and pride that guide the company are transmitted from generation to generation, not only in the company but also in the family. (Lethbridge, 1997) characterized traditional FB as a non-family-owned private company with little transparency in providing financial information about the company. Loyalty and dedication of these companies often exceed other criteria in the selection of human resources. It is common to reward the time of home and the dedication of all those who helped the company to grow, being that these factors are based on the decisions of increase evolution within the company (Moreira Jr & Neto, 2000).

2.2. The positive side and the negative side of family involvement

2.2.1. The positive side

The CEO is the central figure of the organization, it is he who has the responsibility for all the driving of the company (Finkelstein, Hambrick, & Cannella, 1996). This has three important tasks, first is the charismatic representative of the company (Fanelli & Misangyi, 2006), second is the leader of the Top Management Team (TMT) and thirdly the fact of being a "family CEO" confers it is more than enough reason to behave in an altruistic way. Altruism is "a moral value that motivates individuals to perform actions that benefit others without any expectation of external reward" (Schulze, Lubatkin, & Dino, 2002). In this sense, the CEO of the family will tend to make decisions that benefit the profits of the family business that are at the same time benefiting the family (Schulze, Lubatkin, & Dino, 2003). The work and mastery within the TMT and consequently within the company tends to be greater for family CEO than for non-family CEO (D Miller & Le Breton-Miller, 2006).

Familiarity in leadership has a positive impact on the company's performance (R. C. Anderson & Reeb, 2003; Villalonga & Amit, 2006). It is intrinsically linked to the commitment that leaders have with your company (McConaughy, 2000). The articulation between company and family is a fundamental factor for the success of the company (Grzybovski & LIMA, 2004). The participation of people connected to the family in the companies, the loyalty, the strong commitment and dedication that they have to the company is a huge advantage unverifiable in Non-Family Companies (Beehr, Drexler Jr, & Faulkner, 1997).

Due to their specificity, FB are more likely to have conflicts, but, in the face of this particularity, it is where there are greater links between owners and managers (MARTINS, MENEZES, & BERNHOEFT, 1999) which naturally gives the company greater efficiency (Ussman, 2004). This relationship between owner and manager can reduce agency costs, which would naturally increase if Management were not familiar, and thus increase the dividends of managers and consequently the family (McConaughy, 2000). (Daily & Dollinger, 1992), quoted in (Schulze et al., 2001) concluded that EFs are the cheapest and most efficient form of organizational management. (MARTINS et al., 1999) affirms that one of the advantages of EF is the creation of a set of conditions for the definition of a culture more conscious and homogenous, facilitating the pursuit of the objectives of the company. In short, mutual trust, common interests, flexibility of processes, long-term projects, stability of culture and values, and ease of transmission of information and knowledge are in themselves the distinguishing advantages of FB. (Gallo & Sevilhano, 1996; MARTINS et al., 1999).

2.2.2. The negative side

(Lubatkin, Schulze, Ling, & Dino, 2005) propose a negative or black side to family relationships within the company. Family firms are, in theory, different from non-family businesses, since agency relationships are highly influenced by family ties, which may affect the ability of the owner-manager to exercise control within the company (Lubatkin et al., 2005). In this sense, the growth and efficiency of family businesses can only happen in situations where management is assigned to specialized technicians who replace family control (Grzybovski & LIMA, 2004). There is a concave relationship between family ownership and performance, where if the family owns more than 30% of the company this has a negative effect on performance (R. C. Anderson & Reeb, 2003). In cases where this percentage rises to 60%, family-owned companies perform poorly when compared to non-family members (Barth, Gulbrandsen, & Schønea, 2005). There is a strong overlap between Family and Business in Family Companies (R. L. Anderson, Condon, & Dunkelberg, 1992). The familiar issues that end up being transported to the company greatly affect its functioning (GUERREIRO, 1996).

The problem with family businesses is that family goals override the needs of the company (Cohn & Lindberg, 1974). Family involvement in the company is positive, but only when it is driven by profit and not by personal values or considerations (Hollander & Elman, 1988). In this way, conflicts between members of the same family tend to be more difficult to manage, especially when family orientation is strong (Holland & Boulton, 1984; Morris, Silk, Steinberg, Myers, & Robinson, 2007). In the family management can occur the existence of very strict beliefs and values, which with lack of preparation or formation of the family in charge, can constitute an obstacle to the development of the company (MARTINS et al., 1999)

3. Methodology

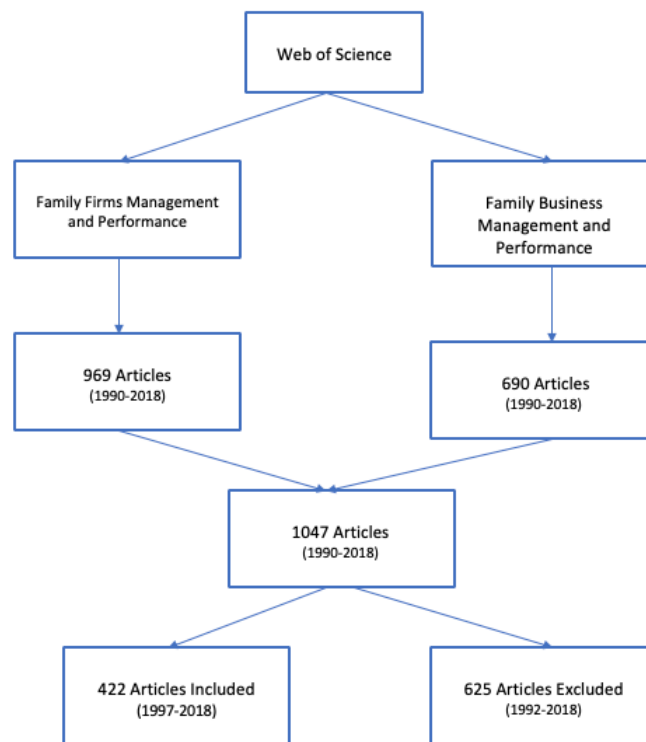
A general search done on any academic research engine, or database of articles on Family Business Management, shows an extensive amount of published studies, as well as the existence of studies in several disciplines and research areas. In this study we will only do the first approach (quantitative analysis), leaving open the possibility of later qualitative studies that this bibliometrics database allows.

The data were collected in January 2019 from the following indices: Science Citation Index Expanded, Social Sciences Citation Index, Arts and Humanities Citation Index, Conference Proceedings Citation Index - Science, Conference Proceedings Citation Index - Social Science and Humanities. It should also be noted that the research was carried out without any chronological filter in the WEB of Science™ Core Collection databases, applying two research topics with the keywords “Family Firms Management” and “Performance”, “Family Business Management” and “Performance”, separately.

In fact, two separated keywords searches were chosen to collect as many articles as possible covering the study topic as well as the areas and sub-areas of management. The outputs were filtered by choosing only “articles” in the types of documents to be included, excluding books, proceedings, among other documents that were not scientific articles.

As a result of the research carried out in WOS, which has the areas organized in Management, Economics and Business, it was divided into two branches: “Family Firms Management” and “Performance” and “Family Business Management” and “Performance”. Next, we refine the research for the area of Business, Management and Economics. The initial search allowed to obtain, after exclusion of duplicates, 969 articles in search 1 and 690 articles in search 2. After crossing the outputs of the two surveys, the duplicates were removed, and 1047 final articles were obtained. Once the final outputs were completed without duplicates, the inclusion criteria were established: (1) articles that deal with family business management and performance. The articles whose subjects were not mentioned above or were not a literature review were excluded. Regardless of the theme, all articles of literature review and/or mapping were included. This decision was due to the necessity to know all the reviews of literature on management of family business and existing performance in order to make this article a value by adding something new that already published had not yet added.

After reading all the abstracts, the first filter was carried out according to the defined criteria. However, it was necessary to read several complete articles whose abstract did not allow us to understand whether or not they approached family business management and performance. After all the work of reading abstracts and /or complete articles, 625 were excluded and 422 articles were included. The final result of 422 articles (WOS) with publication between 1997 and 2018 were the object of our analysis. Figure 3 presents the search criteria used in this study

Figure 3 - Search Settings**Inclusion criteria:**

- Articles that address family business management and performance;
- All articles reviewing and mapping the literature on family business management and performance, regardless of the subject of the review.

Table 1. Characteristics of Family Business

Characteristics	Description	Authors
Strong relationship established between the company and its founder	<ul style="list-style-type: none"> - Company is extension of the founder; - Strong connection to the founder is a source of strength, given the commitment and effort; - It can also lead to authoritarianism and centralization of power; 	(Oliveira, 2010)
The creation of values and traditions is more continuous	<ul style="list-style-type: none"> - Founder conveys to the company his values and beliefs; - The young generations bring to the company their personal values, which are no more than the extension of the values of their parents; - Employees identify the company's culture and values with the family; 	(Chrisman, Sharma, & Taggar, 2007)
It's complicated working in the family business.	<ul style="list-style-type: none"> - It is common to hear of the pressure that young people, especially the second generations, suffer to enter the family enterprise and the complete impossibility of own choice; - Nepotism is a characteristic of FB; 	(Moreira & Neto, 2000)
The Family Business is a company of conflicts	<ul style="list-style-type: none"> - The family is based on affective relations to the company in contractual relations; - The war between father and son; - The war between brothers when both aspire to the top place; - The double relationship between these people tends to agonize the problems; 	(Donnelley, 1964)
Loyalty in Family Business	<ul style="list-style-type: none"> - Loyalty is an intangible asset of incalculable value; - It manifests itself in the members of the family, but also in the collaborators and stakeholders; - A sense of reciprocal belonging between family and company; - Loyalty has a price, usually expensive, for those who are not family; - Loyalty often cloaked in self-indulgence; 	(Ricca, 1998)
The family identifies itself deeply with the company	<ul style="list-style-type: none"> - In many cases the name of the company and the family are the same. Preserving the name of the company is to preserve the name of the family; - Identification that often leads to acts, on the part of the family, that in terms of management would not be justified; 	(Lethbridge, 1997)
Closed the capital strange to the family	<ul style="list-style-type: none"> - The entrance of new members is seen with loss of identity closing the doors to them, even the decision being financially and strategically successful; - Company and Family Identity overlap the entry of new partners; - The stock exchange listing is also not an option; 	(Moreira & Neto, 2000)
They operate mainly from a long-term perspective	<ul style="list-style-type: none"> - Economic security of future generations is preponderant; - The businessman works for the children and so on; - Company thought long term even this does not configure formalized planning; 	(Moreira & Neto, 2000)
The Family Business as an entity that evolves	<ul style="list-style-type: none"> - As the generations pass the company evolves; - New generations change perceptions and create new challenges; - Recruitment and succession processes are important for the continued evolution of the company; 	(Moreira & Neto, 2000)

4 Conclusion

As a result of its importance and value to world economies, the FB continues to justify a high interest among researchers, who in recent years have not only increased the production of research around this area as they have recognized the importance due, often overlooked during the last century.

The main objective of this article was the systematic review of the literature on Family Business Management and Performance. Thus, this work allowed us to describe how the field of research is organized in relation to the main themes addressed by the authors in the articles, highlighting the following topics: Family, Firms, Performance, Business, Management, Ownership, Research, Governance, Corporate, among others, and these were the ones that obtained a higher frequency count. This work allowed us to note that in fact the FB its general, has been increasing interest in the scientific community. We can say that FB is still at a level of growth, due to the successive years of discredit it has suffered, but it is now a fundamental area for all, and proof of this is the growing importance that researchers have shown in relation to the topic, producing more and more investigations of strong academic impact in this area of knowledge.

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PARALLEL SESSION 11

DETERMINANTS OF THE CAPITAL STRUCTURE OF PORTUGUESE COMPANIES

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Extended Abstract

Abstract

The objective of this study is to test empirically which determinants exert influence over indebtedness of Portuguese companies, if these factors fit the Trade-Off Theory (TOT) and the Pecking-Order Theory (POT), and which one tends to be followed by corporations in decisions about capital structure. The expected relationship between the dependent variable and the independent variables was considered in the light of the TOT and the POT and according to the international empirical evidence. Accounting information of 55 Portuguese companies between 2014 and 2016 was collected, and an econometric model for panel data was estimated. The F test, the Lagrange Multiplier Breusch-Pagan (LMBP) test and the Hausman test were used to identify the most appropriate method of estimation, which resulted in a panel data model with random effects for individuals. The general results of the model support that both theories partially explain the financing decisions of Portuguese companies.

Keywords: Capital Structure, Trade-Off Theory, Pecking Order Theory, Indebtedness.

1 Introduction

There are several theories on capital structure to understand the factors that justify corporate financing decisions. However, there is no consensus on the determinants of the structure, nor on the best explanatory theory of behavior in the choice of financing. This problem was driven by the theory proposed by Modigliani & Miller in 1958, based on perfect markets, and improved in 1963. Subsequently, other trends emerged, notably Trade-off Theory (TOT) and Pecking Order Theory (POT). The motivation of this work was to contribute to the scientific research on the influential determinants of the capital structure and to deepen the knowledge of the Portuguese market. The main objective of the study is to test empirically which determinants exert influence over indebtedness, if these factors fit the referred theories, and which one tends to be followed by corporations in decisions about capital structure. For this, the quantitative methodology is used, through an econometric model with panel data.

2 Literature Review

The traditional theory holds that there is an optimal combination of equity and debt in order to maximize the firm's market value by minimizing the weighted average cost of capital (Durand, 1952). In opposition, Modigliani & Miller (1958) defended the theory of the irrelevance of the capital structure, with the assumption of perfect markets. Proposition I states that the market value of a company is independent of its capital structure; proposition II establishes that the expected shareholder return of an indebted company increases proportionally to the debt ratio. Following criticisms for the lack of consideration of taxes, bankruptcy costs, agency costs, transaction costs and costs of adverse selection (Frank & Goyal, 2009), the authors Modigliani & Miller (1963) reformulated the previous model in view of market imperfections, emphasizing the advantages of the tax benefits of debt. Despite the limitations, the model raised attention to the reasons for the importance of business leverage (Alipour, Derakhshan & Mohammadi, 2015) and influenced the emergence of new theories (Frank & Goyal, 2009), namely TOT (Jensen & Meckling, 1976), the Agency theory (Jensen & Meckling, 1976), Free Cash Flow theory (Jensen, 1986), Signaling theory (Ross, 1977) and POT (Myers, 1984, Myers & Majluf, 1984). Among these, research has highlighted TOT and POT, to which will be given focus in this article.

2.1 Trade-Off Theory

The static TOT was first modelled by Kraus and Litzenberger (1973) and Scott (1976), followed by Kim (1978). The analysis of TOT by Jensen & Meckling (1976) was based on the balance between tax effects, agency costs and bankruptcy costs. Kraus & Litzenberger (1973) show that the value of an indebted company is equal to the value of the non-indebted company plus the difference between tax benefits and bankruptcy costs. This means that the company will put itself in debt to the (optimal) point where the marginal tax benefit on additional debt compensates for the increase in the current value of financial distress costs (Myers, 1984). Bessler, Drobetz & Kazemieh (2011) argue that companies with higher risk (volatile cash flows), with a higher proportion of intangible assets and with more growth opportunities, should be less indebted. On the other hand, Titman & Wessels (1988) and Frank & Goyal (2009) argue, respectively, that larger companies and more profitable companies face lower financial distress costs and should present more indebtedness.

2.2 Pecking Order Theory

POT was developed by Myers & Majluf (1984) based on the asymmetry of information proposed by Ross (1977). This author established the signaling theory, based on the problem of information asymmetry between managers and investors, according to which borrowing provides information on the state of the cash flow, consisting of a way of communicating risks and profitability to investors. In this context, managers do not seek a particular (optimal) capital structure. Financing options are driven by the costs of adverse selection due to information asymmetry, giving rise to a hierarchy in the choice of sources (Myers & Majluf, 1984):

- internally generated resources (retention of profits)
- resort to indebtedness
- issuance of stocks

This hierarchy presupposes that the company's actions generate a signal to the market. Indebtedness generates a positive signal to the market, suggesting that the company is growing, while the issuance of capital generates a negative signal, suggesting that the shares are overvalued.

2.3. Determinants of the Capital Structure

Profitability

Frank & Goyal (2009) suggest that the most profitable companies face lower financial distress costs and take better advantage of the tax benefits of interest. According to TOT, a positive relationship between profitability and indebtedness is expected (Jensen, 1986; Alipour, Derakhshan & Mohammadi, 2015). On the other hand, Bessler, Drobetz & Kazemieh (2011) argue that more profitable companies generate more internal funds. According to the POT, a negative relationship between profitability and indebtedness is expected (Frank & Goyal, 2009).

Growth Opportunities

Jensen (1986) argues that firms with more growth opportunities do not need so much indebtedness to monitor deviant managerial activities. But sub / overinvestment problems aggravate agency problems (Jensen & Meckling, 1976; Bessler, Drobetz & Kazemieh, 2011). According to TOT, a negative relationship between growth opportunities and indebtedness is expected (Titman & Wessels, 1988). According to POT there are two possible effects. On the one hand, Aggarwal & Kyaw (2010) and Bessler, Drobetz & Kazemieh (2011) argue that companies with more investment accumulate more debt, suggesting that growth opportunities are positively related to indebtedness. On the contrary, Alipour, Derakhshan & Mohammadi (2015) argue that the fastest growing companies use sources of financing less subject to information asymmetry, using more internal funds.

Size

Titman & Wessels (1988) and Alipour, Derakhshan & Mohammadi (2015) point out that larger firms tend to diversify more, stabilize cash flows and less probability of bankruptcy, thus being more leveraged. According to TOT, a positive relationship between size and indebtedness is expected. Bessler, Drobetz & Kazemieh (2011) suggest that large companies are more followed by the market, there being more information dissemination and, thus, fewer problems of asymmetry. According to the POT, a negative relationship between size and indebtedness is expected (Frank & Goyal, 2009).

Cash flow

Bessler, Drobetz & Kazemieh (2011) and Alipour, Derakhshan & Mohammadi (2015) argue that firms with volatile cash flows have less debt due to financial distress costs. Myers (1984) argues that if cash flows are sufficient for low-risk investment, it will not be useful to resort to indebtedness. According to TOT and POT, a negative relationship between cash flows and indebtedness is expected.

Tangibility

Bessler, Drobetz & Kazemieh (2011) argue that firms with a higher proportion of tangible fixed assets are less likely to default, facing lower financial distress costs. This is due to the greater ease of evaluation of these assets by the outsiders (Frank & Goyal, 2009). According to TOT, a positive relationship between tangibility and indebtedness is expected. Frank & Goyal (2009) and Bessler, Drobetz & Kazemieh (2011) argue that the lower information asymmetry associated with tangible assets makes stock issuance less onerous. According to POT, a negative relationship between tangibility and indebtedness is expected.

Non-Debt Tax Benefits

DeAngelo & Masulis (1980) and Titman & Wessels (1988) suggest that companies with depreciation tax deductions resort less to indebtedness because they are substitutes for interest tax benefits. According to the TOT theory, a negative relationship between these benefits and indebtedness is expected.

3 Empirical Study

3.1. Sample and Data

The accounting information of the Portuguese companies was collected in the SABI database. Crossing the legal form (public company limited by shares (Directive EU 2017/1132) and limited liability company) with the classification of the main economic activities (CAE), and excluding entities that did not present the necessary data, which reported losses (these companies have a better profile to make their own financing decisions), and that did not survive in the analysis period - between 2014 and 2016 - a total of 55 companies were selected, evenly divided by the criteria.

3.2. Variables and Hypotheses of Study

Indebtedness (END) represents the dependent variable in the model, while the independent variables are represented by tangibility (TANG), profitability (REND), size (DIM), growth opportunities (CRESC), nondebt tax benefits (BFNDD), cash flow (FLUXOC), legal form (FJ) and sector of activity (SECTOR).

Table 1 – Dependent variable and independent variables in the model

Variables	Formulation	Empirical Studies of Authors
Indebtedness	$\frac{\text{Total liabilities}}{\text{Total liabilities} + \text{Equity}}$	-Alipour, Derakhshan & Mohammadi (2015) -Coelho (2014)
Tangibility	$\frac{\text{Net Tangible Fixed Assets}}{\text{Total Assets}}$	-Alipour, Derakhshan & Mohammadi (2015) -Coelho (2014) -Serrasqueiro & Nunes (2010) -Serrasqueiro, Nunes & Silva (2012)
Profitability	$\frac{\text{Net Income}}{\text{Equity}}$	- Coelho (2014)
Size	$\ln(\text{Turnover})$	-Coelho (2014) -Serrasqueiro & Nunes (2010) -Titman & Wessels (1988)
Growth Opportunities	$\frac{\text{Total Assets}_N - \text{Total Assets}_{N-1}}{\text{Total Assets}_{N-1}}$	-Alipour, Derakhshan & Mohammadi (2015) -Serrasqueiro, Nunes & Silva (2012)
Non-Debt Tax Benefits	$\frac{\text{Depreciation} / \text{Amortization}}{\text{Total Assets}}$	-Fama & French (2002) -Serrasqueiro & Nunes (2010) -Serrasqueiro, Nunes & Silva (2012) -Titman & Wessels (1988)
Cash Flow	$\frac{\text{Net Income} + \text{Depreciation}}{\text{Total Assets}}$	-Serrasqueiro & Nunes (2010)

Source: Own elaboration

The definition of the hypotheses to be tested in the study is based on the identification of the determinants that influence the capital structure. Thus, the expected relationship between the dependent variable and the independent variables was considered in the light of the TOT and the POT (Table 2). The hypotheses were also defined according to the majority of the international empirical evidence (Table 3).

Table 2 – Expected relationship by TOT and POT between indebtedness and determinants of capital structure

Leverage Fator	TO Theory	PO Theory
Tangibility	+	-
Profitability	+	-
Size	+	-
Growth Opportunities	-	+ / -
Non-Debt Tax Benefits	-	
Cash Flow		-

Source: Own elaboration

Table 3 – Empirical evidence of the relationship between indebtedness and determinants of capital structure

Explanatory Variables	Relation to Indebtedness	Empirical Studies
Tangibility	+	-Coelho (2014) -Frank & Goyal (2009)
Profitability	-	-Alipour, Derakhshan & Mohammadi (2015) -Coelho (2014) -Frank & Goyal (2009) -Gomes (2013) -Serrasqueiro & Nunes (2010) -Titman & Wessels (1988)
Size	+	-Coelho (2014) -Frank & Goyal (2009) -Serrasqueiro & Nunes (2010)
Growth Opportunities	-	-Alipour, Derakhshan & Mohammadi (2015) -Fama & French (2002) -Frank & Goyal (2009)
Non-Debt Tax Benefits	-	-Fama & French (2002) -Gomes (2013) -Serrasqueiro & Nunes (2010)
Cash Flow	-	-Serrasqueiro & Nunes (2010)
Activity Sector	+/-	-Titman & Wessels (1988)

Source: Own elaboration

Based on the above, the hypotheses of study are defined:

H1: Tangibility is positively related to indebtedness

H2: Profitability is negatively related to indebtedness

H3: Size is positively related to indebtedness

H4: Growth opportunities are negatively related to indebtedness

H5: Non-debt tax benefits are negatively related to indebtedness

H6: Cash flow is negatively related to indebtedness

H7: The sector of activity exerts influence on the indebtedness **H8:** Legal form exerts influence on the indebtedness

3.3. Methodology

The methodology underlying the identification of the determinants of financing decisions, and thus the capital structure of Portuguese companies, is characterized by a quantitative study using the Ordinary Least Squares (OLS), Least Squares Dummy Variables (LSDV), and Random Effects regression models. The analysis of panel data considers the effects of the individuals (companies in the sample) and the time (period of 3 years), and statistical tests are applied for model selection.

OLS model

The OLS linear regression model can be stated as (Castro, Martins & Murteira, 2016):

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_k X_{kit} + \varepsilon_{it} \quad [1]$$

Y_{it} - explained variable of individual i at time t

$\beta_0, \beta_1, \beta_2, \dots, \beta_k$ - regression coefficients

$X_{1it}, X_{2it}, \dots, X_{kit}$ - explanatory covariates of individual i at time t ε_{it} - error term or residuals

Model LSDV within

The panel data model with fixed effects for individuals can be represented by (Castro, Martins & Murteira, 2016):

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_k X_{kit} + \alpha_i + \varepsilon_{it} \quad [4]$$

and the panel data model with fixed effects for time:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_k X_{kit} + \theta_t + \varepsilon_{it} \quad [5]$$

as well as the panel data model with fixed effects for individuals and for time:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_k X_{kit} + \alpha_i + \theta_t + \varepsilon_{it} \quad [6]$$

α_i - constants representing the specific effects of the individuals

θ_t - constants representing the specific effect of each moment in time

Random Effects Model

The panel data model with random effects for individuals may be represented by (Castro, Martins & Murteira, 2016):

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_k X_{kit} + b_i + \varepsilon_{it} \quad [7]$$

b_i - random variable with normal distribution and zero mean, independent of ε_{it}

Panel Data Model

The selection of the most suitable model for the study uses statistical tests under certain hypotheses. The study on the capital structure of Portuguese companies uses the following random effects model for individuals:

$$END_{it} = \beta_0 + \beta_1 TANG_{it} + \beta_2 REND_{it} + \beta_3 DIM_{it} + \beta_4 CRESC_{it} + \beta_5 BFNDD_{it} + \beta_6 FLUXOC_{it} + \beta_7 FJ_{it} + \beta_8 SETOR_{it} + b_i + \varepsilon_{it} \quad [8]$$

4 Results and Tests*4.1 Model Selection*

The F test, the Lagrange Multiplier Breusch-Pagan (LMBP) test and the Hausman test were used to identify the most appropriate method of estimation of the coefficients.

Table 4 – Tests to select the most adequate model

	Pooled Model	Panel data model with fixed effects for individuals and for time	Panel data model with random effects for individuals
Panel data model with fixed effects for individuals	F Test p =< 2.2e-16*** LMBP Test p =< 2.2e-16***	F Test p = 0.1831 LMBP Test p = 0.2356	Hausman Test p = 0.5369
Panel data model with fixed effects for time	F Test p = 0.9463 LMBP Test p = 0.2356		
Panel data model with fixed effects for individuals and for time	F Test p =< 2.2e-16***		

Significance levels: *** 0,1%, ** 1%, * 5%, . 10%.

Source: Own elaboration

Considering the results presented in Table 4, the appropriate model for this study will be the panel data model with random effects for individuals. It includes all explanatory variables suggested for the study (c.f. Table 1), some of which have no significant relation with the explained variable.

Manipulation of the Random Effects Model for Individuals

To achieve the best specification from the selected model, the Backward procedure was used to remove the independent variables without explanatory power (REND, BFND, FJ and SECTOR) and to improve the performance of the variables that remain. Through this manipulation, with rotation of independent variables, we found 30 new simulated models which were grouped in 5 groups, as a function of the relation of the independent variables with the dependent variable. Given that the difference between these models lies mainly in BFND and SECTOR, the model presented in Table 5 was chosen, because in it most of the variables become more significant.

4.2. Results of the Adopted Model

Table 5 – Estimates of the panel data model with random effects for individuals – Best model

Variables	Coefficient	Pr(> t)
TANG	0.1560	0.0209*
REND	0.0126	0.2027
DIM	0.0317	<2.2e-16***
CRESC	0.0329	0.0600·
BFND	0.2633	0.0958·
FLUXOC	-0.4264	0.0007***

Significance levels: *** 0,1%, ** 1%, * 5%, . 10%.

Source: Own elaboration.

The reduced expression of the adjusted coefficient of determination ($R^2_{Adj} = 0.1372$) in this model can be explained by the absence of the independent term, which is included in the OLS linear regression model with higher quality of fit (0.2020). The results of the Variance Inflation Factor (VIF) suggest absence of multicollinearity problems. Given that the FJ and SECTOR variables were excluded from the best model, the hypotheses H7 and H8 can not be validated.

Table 6 - Confrontation between expected relationship and observed relationship

Hypotheses	Expected Relation (hypotheses)	Observed Relation (results)	Decision
H ₁	+	+	Accepted
H ₂	-	n.s	Invalidated
H ₃	+	+	Accepted
H ₄	-	+	Rejected
H ₅	-	+	Rejected
H ₆	-	-	Accepted

+ positive relationship, - negative relationship, n.s "non significant".

Source: Own elaboration.

5 Conclusions

Using the panel data model with random effects for individuals, we investigated the determinants that underlie the decisions on capital structure of Portuguese companies, considering the assumptions of TOT and POT theories. The results show that the variables RENT, FJ and SECTOR are not relevant in the explanation of corporate indebtedness. The positive relationship with TANG suggests that the lower probability of default and agency costs, arising from the guarantees of these assets, support TOT, in agreement with Coelho (2014), and Frank & Goyal (2009). In addition, the positive relationship with DIM suggests that the lower probability of bankruptcy, arising from the diversification and stability of cash flows, contributes to the increase of indebtedness, agency costs and transaction, supporting TOT, and by Coelho (2014), Frank & Goyal (2009), and Serrasqueiro & Nunes (2010). However, the positive relationship with the BFNDD suggests the importance of taxes, contrary to TOT. This is corroborated by the studies of Frank & Goyal (2009). The negative relationship with FLUXOC – coupled with the positive relationships between DIM and CRESC – suggests the use of funding only when internal funds become insufficient, supporting the POT. The general results support that both theories partially explain the financing decisions of Portuguese companies.

For future research it is recommended the inclusion of other sectors of activity (CAE) in the sample, which could provide relevance to this variable. In addition, other potentially explanatory factors of indebtedness, such as exports, the effective rate of income tax and the distribution of profits, are suggested.

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PARALLEL SESSION 11

EARLINESS AND SPEED OF INTERNATIONALIZATION OF FAMILY FIRMS: THE MODERATION ROLE OF INNOVATION ACTIVITIES

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Extended Abstract

Abstract

Currently, the pressure to internationalize is big. Selling outside the domestic market is, also, for the family firms a relevant goal. Knowing that characteristics of family businesses affect their activity and decisions in international markets, understanding how the family ownership determine the earliness and post-internationalization speed, is particularly important. In addition, we intend to analyze how innovation activities moderate this relationship. We propose, therefore, to contribute to a better understanding of the factors that influence the speed of internationalization of family firms.

Keywords: Family firms; innovation; speed of internationalization; earliness; post-internationalization speed.

1 Introduction

In most economies, family firms play a central role, given their great economic and social relevance, with 65% to 80% of the world's firms being of family nature (Gersick et al., 1997, Chu, 2011). The characteristics of family firms are factors with a strong influence on their international activities.

The speed of internationalization has been the most important dimension in the research on the internationalization of firms (Prashantham & Young, 2011) gaining, in the last decade, a central position (Acedo & Jones, 2007; Casillas & Acedo, 2013). In really, the speed of internationalization is the key to internationalization strategies (Chetty et al., 2014). In addition, the conception that innovation corresponds to an element of market differentiation is widely accepted in the literature (Schumpeter, 1942; Baumol, 2002) contributing to productivity growth on the firms. In the case of family firms, the innovation is essential for this to survive between generations (Kellermanns And Eddleston, 2006; Salvato, 2004) and provide growth (Casillas, Moreno, & Barbero, 2011).

The literature that relates family business with the speed of internationalization remains scarce and there isn't consensus about the nature of this relationship (Sciascia et al., 2012; De Massis et al., 2018) and, to the best of our knowledge, the few papers on this subject are stemming from the international entrepreneurship literature. In addition, this study goes beyond existing studies, examining the possible moderating effect of innovation activities on the relation of family ownership to earliness and speed of post-internationalization. Thus, the aim of this study is to analyze whether family ownership affects the earliness and post-internationalization speed of family firms and how innovation activities moderate this relationship. Family-owned firms with high levels of ownership are expected to be more risk-averse and more less change-oriented, which will lead them to enter international markets later and the post-internationalization process will be slower. In addition, innovation activities are expected to moderate positively this relationship, i.e., are expected to boost a more early, faster and more successful internationalization process. We will use a survey of a sample of SMEs from the Northern Euro-region of Portugal/Galicia.

2 Literature and hypothesis

2.1 Earliness and post-internationalization speed: concept and measures

In spite of its increasing research, the speed of internationalization shows a lack of conceptual clarity and of measures (Hilmersson et al., 2017), being approached according to several perspectives (Jørgensen, 2014). Regarding the measurement, it became quite common to differentiate between the initial input speed (earliness) and the post-internationalization speed (Morgan-Thomas & Jones, 2009; Prashantham & Young, 2011).

Some of the most relevant studies in this area measure the earliness like the difference between the year of constitution of the firm and the year of the first export (Luo et al., 2005; Musteen et al., 2010; Cesinger et al., 2013) or when the firm internationalizes its activities within five years of its foundation (Madsen & Servais, 1997; Lin, 2014; Varma et al., 2016) using any modes of internationalization like exporting (Liang et al., 2014), alliances/joint ventures (Zapkau et al., 2014) or foreign investments (Pinho, 2007). With regard to the post-internationalization speed the literature shows that it can be measured as various dimensions such as scale, scope and pace. The scale (also called degree of internationalization or extent) refers to the level of sales in foreign markets and is measured like the foreign sales as a percentage of total sales (Segaro, 2012) or the level of exports sales (Kowalik et al., 2017). The territorial scope of activity is measured like the number of countries in which the firm establishes subsidiaries in a given year (Lin, 2012) or the number of countries where the firm exports (Pla-Barber & Escribá-Esteve, 2006). Finally, the pace refers to a foreign subsidiary and is measured, for example, by the average number of foreign subsidiaries per year (Lin, 2012). In fact, both conceptual studies (Oviatt & McDougall, 2005; Casillas & Acedo, 2013) and empirical studies (Pla-Barber & Escribá-Esteve, 2006; Cesinger et al., 2013) have suggested that the speed of internationalization is a multidimensional concept, but the literature indicates that "speed of international expansion" captures how fast a firm spreads its sales activities to various foreign markets (Casillas and Acedo 2013; Hilmersson and Johanson 2016; Hilmersson et al., 2017).

2.2 Internationalization of family firms

Some researchers (Astrachan et al., 2002; Casillas & Acedo, 2007; Roessl et al., 2010) define a family firm as a company where the majority of capital and top management power (> 50%) are held by one or more family members. In fact, the presence of family CEOs and top managers implies active family management (Denis & Denis, 1994), where the influence of family ownership on firm performance is likely to be enhanced (Chu, 2011). Other investigators (Chang, 2003; Filatotchev et al., 2007; Peng & Jiang, 2010; Lien & Li, 2014) measure family ownership as the percentage of shareholdings held by family on the company. However, the definitions of family firms are often fragmented and there is no consensus about this concept (Astrachan & Shanker, 2003; Cesinger et al., 2013).

One of the models most approached in the family business literature is the three-circle model, suggested by Gersick et al., 1997. This model describes the family business as three independent but interrelated subsystems: management, property and family, therefore, the conflicts may arise due to the complexity of the existing relationships but, there are tools that allow the conflicts and challenges faced by family firms to be overcome - planning, professionalism, division of personal roles, the use of external counselors and advisors (Casillas & Acedo, 2007). In addition, the literature refers more two ideas about family firms: the family firm exists as a specific type of firm and the main challenge of a family firm is succession (Casillas & Acedo, 2007). Beyond succession, the family firms have more challenges, and with them new research topics: strategic management, conflict management, innovation and internationalization (Bird et al., 2002; Acedo and Casillas, 2007).

In literature, the link between family business and internationalization process remains relatively unexplored (Lin, 2012; Sciascia et al., 2012) and family involvement plays opposite roles in this dimension (De Massis et al., 2018). Several investigators (Kontinen & Ojala, 2010; Pukall & Calabrò, 2014) have prepared a review of empirical studies linking familiness and internationalization, concluding that there is no consensus on whether family ownership restrains or facilitates their internationalization. While some studies show that family firms are less internationalized (Fernández & Nieto, 2006; Gomez-Mejia et al., 2010; Cerrato & Piva, 2012; Arregle et al., 2017) others reveal that familiness positively affects internationalization (Zahra, 2003; Kontinen & Ojala, 2012; Chen et al., 2014).

Family firms have unique characteristics and come across with higher obstacles to access the resources that they need (Sirmon et al., 2008). The individual resources of the CEO - key person the internationalization process - are very important for recognize new opportunities for growth or dangers in international markets (Ruzzier, Antoncic, Hisrich, & Konecnik, 2007). Besides the knowledge, experience, and networks of relationships, tenure is viewed as the most salient characteristic of a new CEO's insider status in the firm (Lin and Liu, 2012).

Some scholars (Shleifer & Vishny, 1997; Thomsen & Pedersen, 2000; Ashwin et al., 2015) argue that family owners usually invest a large proportion of their wealth in firm, this highly undiversified shareholding can lead to a risk-averse attitude. However, family owners aren't only concerned with financial consequences of their investments, but also tend to prioritize the objective of preservation or enhancement of Socio-Emotional Wealth (SEW) as a key criterion influencing the decision-making process (Gómez- Mejía et al., 2007; Berrone et al., 2012). Family owner's willingness to preserve or enhance family SEW influences the management of family firms to consider both economic and noneconomic objectives and sometimes forgo financially lucrative entrepreneurial opportunities (Berrone et al., 2012). Thus, family owners unwillingness to pursue risk strategies such as internationalization depends on their ownership stake (George et al., 2005).

In addition to the above, the literature indicate that family owners due to more conservative behavior, risk aversion and Socio-Emotional Wealth (SEW) protection, tend don't fill the financial, managerial and knowledge resource restrictions through nonfamily partners and will thus be more reluctant to internationalize compared to other firms (Gomez-Mejia et al., 2010; Arregle et al., 2012). Due to the limited knowledge and psychological commitment to the status quo (Hambrick Geletkanycz, & Fredrickson, 1993), the internal successors less responsiveness to the change in international operations is expected. In really, any change in internationalization strategy is considered by them risky (Mitchell, Shaver e Yeung, 1992). In this line of thought, external resources and the international personal networks of the outsiders CEOs, could help to boost the international strategies previously blocked by lack of resources or inertia (Daily et al., 2000) and thus, be more willing to undertake quicker (Friedman & Saul, 1991) in international markets. However, in the case of family firms, where managers are appointed by succession or family relationships, is expected to be an obstacle to an earlier and faster internationalization process.

In addition, it's shared by the literature that entry for the first time in international markets requires to spend a lot of time to overcome cultural challenges (Barkema and Shvyrkov, 2007). In fact, a careful analysis of the new markets can affect the probability of operational success (Lin and Liu, 2012), something even more important when it is intended to reduce the risk and uncertainty of the activities developed, as in the case of family firms.

Therefore, according to previous research that explores the effect of family business characteristics on the processes of internationalization, family owners have more conservative behavior, risk aversion and Socio-Emotional Wealth (SEW) protection. As a result, it is expected that a family business with a high level of ownership will enter the international markets more later. Given this pattern, the following hypothesis is proposed.

Hypothesis 1: The family ownership is negatively related to the earliness of family firms, i.e., firms with higher (lower) levels of family ownership enter on international markets more later (early)

About post-internationalization speed, the use of different definitions creates problems in their measures. According to Sullivan (1994), measuring the degree of internationalization has been a key issue in the internationalization strategy of firm, and it's quite common to measure by the ratio of foreign sales to total sales (FS/TS). However, there is a consensus in literature that this measure isn't necessarily a good measure of firm's degree of internationalization (eg, Asmussen, 2009; Hennart, 2007, 2011, Hitt et al., 1997; Sanders & Carpenter, 1998; Sullivan), because doesn't consider the different components of internationalization (Hennart, 2011). According to Arregle et al., (2017) that family firms differ, essentially, in the number of foreign subsidiaries (pace) and number of countries (scope) in which firm has FDI, because these two dimensions have a higher risk. According the author, the restrictions relatives a foreign subsidiary are related with the costs of FDI and the number of managers in family who could manage the subsidiaries, while the restrictions of geographic scope includes the constraints on diversity of existing managerial capabilities portfolio to deal with the new and diverse institutional environments (Arregle et al., 2017).

Similarly, high levels of family ownership can reduce efforts in terms of scale, scope and pace in international markets. As a result, it is expected that a family business with a high level of ownership present a smaller post-internationalization speed. Given this pattern, the following hypotheses are proposed.

Hypothesis 2: The family ownership is negatively related to the post-internationalization speed, i.e., firms with higher (lower) levels of family ownership present a smaller (bigger) level of international sales (scale), geographic diversification (scope) and number of foreign subsidiaries (pace)

The above hypotheses are intended to contribute for fill the following gaps in the literature: Are family firms slower or faster at internationalizing? Does family heterogeneity affect the speed of internationalization? (De Massis et al., 2018). Combining all of the above arguments, it appears that the "restrictive" factors influencing internationalization suggest that family-controlled firms (FCFs) exhibit a lower propensity to internationalize compared to other firms (Arregle et al, 2017). Hence, we consider that higher family ownership not only decreases family owner's willingness to allow family firms to pursue internationalization, but also increases their ability to influence management to avoid risky internationalization activities.

2.3 Moderation of innovation activities on the relationship between family ownership and earliness/post-internationalization speed

Innovation is to be the main responsible for the creation and maintenance of competitive advantages being, constantly, defined as the application of new ideas in the generation of products or processes (Schumpeter, 1942). Innovativeness is one of the characteristics which have been used to describe rapidly internationalizing firms (Oviatt & McDougall, 1994), being considered as one of the antecedents of internationalization in young firms (Knight et al., 2004). In this way, a lot of recent research has confirmed the correlation between innovation intensity and internationalization speed. Trigo et al., 2009 concluded that innovation, adaption to the market, knowledge of distribution and communication channels contribute to internationalization. In addition, other researchers demonstrated that innovative orientation influences the early foreign market entry (Ripolles et al., 2010; Lamotte & Colovic, 2013). In this sense, there is a positive correlation between innovation and internationalization (Altomonte et al., 2013; Braga et al., 2017).

As far as family businesses are concerned, it's common not to associate them with innovative companies. Instead innovation projects, family firms tend to prefer investments in less uncertain assets, such as buildings and production machineries (Anderson et al., 2012), which render cash flows more predictable and allow for more stability, for instance, in dividend payments (Miller et al., 2011). In addition, the focus on the non-financial goal to maintain control renders family firms' innovation input limited per se (König et al., 2013). However, recent suggest that family firms can obtain more return on their investments (Duran et al, 2015) and the family ownership contribute for increase sales on new products and technology (Xiang et al, 2019). Duran et al (2015), argue that family's high level of control over the firm, wealth concentration and importance of non-financial goals of the family firms, leads to invest less in innovation, but have an increased conversion rate of innovation input into output and, ultimately, a higher innovation output than non-family firms. The desire of family firms to avoid uncertainty and their reluctance to take on external money further motivates an efficient or "parsimonious" (Carney, 2005) conversion of innovation input into innovation output (Duran, 2015). Based on the literature review, we have proposed the following hypothesis:

H3a: The negative relationship between family ownership and earliness of internationalization will be weaker when firms present a higher level of innovation activities (innovation output)

H3b: The negative relationship between family ownership and post-internationalization speed of internationalization will be weaker when firms present a higher level of innovation activities (innovation output)

3 Research Methodologies

3.1 Data and sample

The research analysis unit are the international SMEs from the Northern Euro-region of Portugal / Galicia. In order to select the firms, we will start from the SABI (Iberian Balance Analysis System) database that contains credible and current quantitative information from Portuguese and Spanish firms. We focus on traditional manufacturing sectors, footwear and textile, because they are heavily internationalized sectors (NACE codes 14 e 15). In addition to the quantitative data available in a secondary source statistical database, we will send a questionnaire to the selected SME management team.

3.2 Measures

Target Variables: Earliness. Calculated as time lag, in years/days, between the first internationalization and firm's founding (Acedo and Casillas, 2007; Sapienza and Almeida, 2000; Schwens C, Kabst R, 2011; Aygoren and Kadakal, 2018). Post-internationalization speed. According to contributions from the literature (Hilmersson and Johanson 2016; Pla - Barber and Escribá - Esteve 2006) and a more robust and complete analysis the post-internationalization speed, we propose to adopt a multidimensional metric considering the changes, in every year, on the following dimensions: scale, scope and pace (Nadolska and Barkema, 2007; Chang and Rhee, 2011; Mohr, et al, 2014; Arregle, et al, 2017).

Antecedents: use of Family Ownership and Innovation output. To measure family ownership we considered a numerical measure, which indicates the percentage of equity owned by family members (Chu, 2011). On the other hand, to measure innovation output we adopted a measure of sales based on innovation, that is, sales from products and/or technologies introduced (Xiang et al, 2019).

Control Variables: According to previous investigations (George et al., 2005; Chu, 2011; Lin, 2012, Calabrò & Mussolino, 2013; D.Duran et al, 2015; Aygoren and Kadakal, 2018) this study controls the following factors: firm's size, firm's age, firm's networking, firm's family management, outsider manager's ratio, manager's risk-taking, manager's international experience and institutional support.

4 Discussion and Results

Based on the literature review, we constructed a model (cf. Fig 1) to test whether the family ownership affects the earliness and post-internationalization speed, analyzing how innovation moderates this relationship.

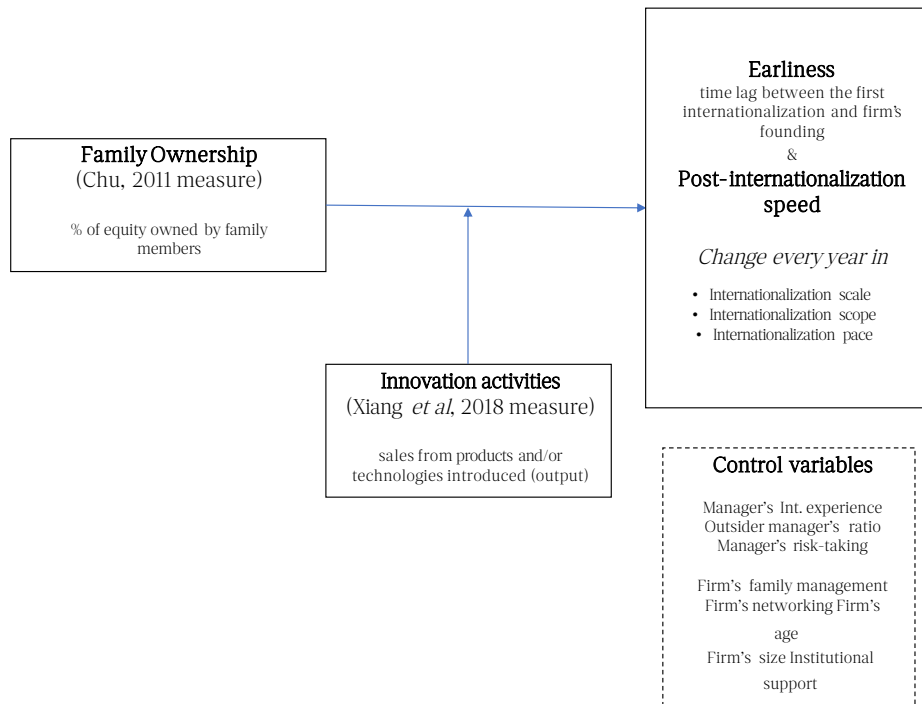


Fig.1. Research model of the study

Depending on the acceptance of hypotheses we can have two scenarios. The first scenario would entail analyze effect of family ownership on earliness (H1) and post-internationalization speed (H2). In this way, we expect that family firms enter on international markets more later and internationalize less than their counterparts, moving slowly on international markets, because of their conservative behavior, risk aversion and SEW protection (George et al., 2005; Gomez-Mejia et al., 2010; Arregle et al., 2012; Arregle et al., 2017). In the second case, we expect that impact that family ownership has on the earliness (H3a) and post-internationalization speed (H3b) be moderate by their level of innovation output. Thus, we expect that innovation activities has a positive influence on earliness and post-internationalization speed helping family firms to internationalize their business (Altomonte et al., 2013; Braga et al., 2017).

5 Conclusions

This paper sought to clarify the fundamentals of the speed of internationalization (earliness vs. post-internationalization speed) of family firms. We dig deeper in whether the effect that family ownership exerts on the speed of internationalization can be influenced by the level of innovation output, enriching the research that links these firms to international business. The most important limitations of the study are related to the sampling methodology. First, our sample it is composed by manufacturing firms from a traditional industry being limited. In this way, future analysis should be conducted in other industries to validate whether this impact is similar in other areas. Second, we use only SMEs located in a Northern Euro-region of Portugal /Galicia, so this research will benefit from enlarging the geographical scope of the sample.

The theoretical implications imply that earliness and post-internationalization speed are influenced by both family ownership and organizational capacity for innovation activities. Thus, part of the explanation of the emergence of early and accelerated patterns of internationalization is rooted in the characteristics of family and organizational enterprises, ie, family ownership level and the capacity to produce innovation activities (innovation outputs).

Practical implications relate to the idea of emergent and deliberate strategies. While some family firms may internationalize to take advantage of unplanned opportunities, they need to be aware that their characteristics, such as family ownership, may affect their internationalization process. In addition, it seems that going international at a fast pace may require a certain level of innovation output. In summary, to get a quick speed of internationalization, it seems it's necessary to compensate the negative effects of family ownership with a certain level of innovation activities.

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PARALLEL SESSION 11

OWNERSHIP STRUCTURE AND FINANCIAL DISTRESS: AN EMPIRICAL SURVIVAL ANALYSIS OF PORTUGUESE SMEs

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Extended Abstract

Abstract

Using a dataset that includes 18 145 Portuguese small and medium-sized enterprises (SMEs) between 2007 and 2017, we examine the relationship between ownership concentration and the probability of financial distress. In particular we intend to analyze the effects of the concentration of the shareholder structure and the problems of agency principal-principal (firms with a shareholder vs. firms with more than one shareholder) as well as the problems of agency principal-agent (firms with a shareholder vs. firms with a shareholder and that this is also the manager) in the financial survival of Portuguese SMEs, adopting the survival analysis methodology. Using a Cox Proportional Hazard Model, we find that ownership concentration is strongly related to the probability of financial distress for Portuguese SMEs, for the period under analyses. In particular, firms owned by a single shareholder that is also the manager face significantly less relative risk of financial distress, comparatively to (i) firms owned by a single shareholder that is not the manager, and (ii) firms owned by multiple shareholders. The robustness of the model was checked as its predictive ability.

Keywords: Financial distress; Ownership concentration; SMEs; Survival analysis.

1 Introduction

The literature on firm bankruptcy probability is wide, and on overall it recognizes that timely identification of impending failure of firms is desirable to ensure the stability of financial markets and general economic prosperity (Gordini, 2014). Firm bankruptcy has several consequences for the various stakeholders, and a high rate of corporate bankruptcy can be devastating to a country's society and economy. Most of the studies dedicated to firm bankruptcy probability are based on financial ratios, generally grouped into four families: liquidity, solvency, profitability, and structure (Cultrera & Brédart, 2016). Following the studies of Altman (1968) and Beaver (1966), many other authors have tested the effectiveness of financial indicators to construct models capable of predicting corporate insolvency. These types of models are especially useful for the banking sector, allowing them to verify the financial situation of their borrowers.

However, most of them focus on large firms, only recently have some researchers approached small and medium-sized enterprises (SMEs) (e.g., Altman & Sabato (2007), Cultrera & Brédart (2016), Holmes, Hunt, & Stone (2010), Mata & Portugal (1994), Nunes & Serrasqueiro (2012), Pérez, Llopis, & Llopis (2004), Reis Mourao & Oliveira (2010)). Cultrera & Brédart (2016) argue that the scarcity of studies on SMEs is largely due to the fact that SMEs have heterogeneous characteristics and difficulty in accessing financial data.

Studies of large firms ignore the fact that SMEs play a key role in achieving the objectives of job creation and economic growth, especially in the peripheral countries of the European Union. Specifically, Portuguese SMEs account for 99.6% of the total business sector, which attests to their relevance to the country's employment and economic growth (Nunes & Serrasqueiro, 2012).

In the 1990s, the emergence of empirical studies analyzing the survival of firms was significant. The term survival analysis generally represents a set of statistical tools used to answer questions related to time and the occurrence of an event of interest (Gupta, Gregoriou, & Ebrahimi, 2018).

The use of this type of analysis has been widely used in medicine, where the period of time until death or recurrence of a disease is usually the event of interest. Thus, as regards survival analysis, the fundamental variable is the time for the occurrence of an event, in the case of the present study the event of interest is related to the occurrence of financial distress. (Gupta, Gregoriou, et al., 2018) point out that the recent literature on corporate bankruptcy prediction argues that a definition based on financial distress is more appropriate than a definition based on legal consequences.

Legal insolvency usually involves lengthy legal proceedings, and there are usually significant time discrepancies between the date of actual bankruptcy and the date of legal bankruptcy. In this way, the use of legal insolvency to define a firm as bankrupt in a survival study may not be the most appropriate, since in this type of analysis the time variable is fundamental. For that, we chose to analyze the probability of firm financial distress rather than firm bankruptcy.

After the study of Berle & Means (1932), several other authors have shown an interest in investigating the effects between ownership unbundling and firm control. The existence of different objectives by the various shareholders in which there are distinct percentages of shares held and between shareholders and managers give rise to problems known as agency problems. The theory of agency is based on the idea that the separation of ownership (principal) and management (agent) originates costs associated with the resolution of conflicts between the principal and agents (Berle & Means, 1932; Jensen & Meckling, 1976).

This more classical view of agency theory is based on the assumption that managers act according to their own interests, sometimes leading them to not protect the interests of capital holders. Concerning ownership concentration, one part of the literature argues that the presence of a high ownership concentration generates positive effects on firm performance, given that large shareholders are encouraged and usually have the capacity to effectively monitor managers (Jensen & Meckling, 1976; Shleifer & Vishny, 1986). Another part of the literature argues that in situations where the ownership concentration exceeds certain limits, large shareholders tend to exercise their control rights in their own benefit, in some cases by expropriating minority shareholders, leading to "principal-principal" agency problems (Shleifer & Vishny, 1997).

The relationship between corporate governance and performance has been broadly addressed over the years, in which the conclusions are divergent, but only a few studies have addressed the corporate governance relationship and the probability of default (Ciampi, 2015)

A literature review on the relationship between corporate governance and corporate survival or bankruptcy probability led us to identify some articles that explore this relationship. The article by Chaganti, Mahajan, & Sharma (1985) explores the effect of board size, the proportion of external directors and whether the manager is cumulatively CEO-duality has an influence on the probability of default. The authors analyzed a sample of 42 retail firms, of which 21 firms went bankrupt and 21 survived, the results obtained by them indicate that firms with a larger board of directors are less likely to fail, relative to the proportion of external directors and CEO-duality did not present significant results for predicting bankruptcy. Hambrick & Aveni (1992) analyzed a sample of 114 large firms (57 bankrupt and 57 survivors). Their findings show that the deterioration of the top management team is a central element in a downward spiral of bankruptcy for large firms. Elloumi & Gueyie (2001) analyzed the relationship between the characteristics of corporate governance and a state of financial difficulties, they applied a logit regression to a sample of 114 Canadian firms (46 in financial difficulties and 46 healthy). The results evidenced by the authors show that the factors that contribute to the state of firms' financial difficulties are, the composition of the board of directors and if external directors are owners. Parker, Peters, & Turetsky (2002) investigated the association of several attributes of corporate governance and financial characteristics with the firms' probability of survival with financial difficulties. To that end, they applied the Cox proportional hazard model to a sample of 176 firms in financial difficulties. The results obtained indicate that firms that have replaced their chief executive officer with an outsider are more than twice as likely to fail. They also affirm that firms with a high percentage of shares held by a shareholder (blockholder) and by insider ownership are more likely to survive.

Platt & Platt (2012) investigated how the composition and characteristics of boards of directors are related to the success and solvency of firms. In the study, they analyzed a sample of 292 firms, of which 87 were bankrupt and 205 were non-bankrupt, the results showed that non-bankrupt firms have a larger and older, more independent board of directors, which are also executive directors of other firms, and independent directors hold fewer shares. Ciampi (2015) analyzed how the relationship between the mechanisms of corporate governance and corporate bankruptcy changes in small firms compared to larger firms. In the article, logistic regression was applied to a sample of 934 Italian small firms, resulting in that corporate governance variables significantly improve the accuracy of small business bankruptcy forecasting rates. The results further demonstrate that, CEO-duality, ownership concentration, and that a reduced number of external directors on the board (not more than 50%), are significant and negatively correlated with small business bankruptcy. Summarizing, from agency theory results that in firms with more than one shareholder (1), there may be principal-principal and principal-agent type problems. In the case of firms with a shareholder (2), there can only be principal-agent problems, since the firm's ownership is concentrated in a single entity. Regarding the case of firms with a shareholder and that this is also the manager (3), there are no problems of agency, since there is no separation between ownership and management of the firm.

In the present analysis we intend to analyze the effects of the concentration of the shareholder structure and the problems of agency principal-principal [firms with a shareholder (2) and (3) vs. firms with more than one shareholder (1)] as well as the problems of agency principal-agent [firms with a shareholder (2) vs. firms with a shareholder and that this is also the manager (3)] in the financial survival of Portuguese SMEs, adopting the survival analysis methodology. The use of a survival analysis allows the model to reflect the ability to explain the effect of predictors on addition, and also shows the ability to consider a longitudinal duration of time until an event of interest occurs (Kim, Ma, & Zhou, 2016). The fact that this type of model does not ignore the longitudinal factor of time, makes it superior to most static models that ignore the fact that a firm change throughout its existence (Shumway, 2001). Among survival models, the Cox (1975) proportional hazards model has been one of the most popular models because it is less restrictive in its assumptions (Kim et al., 2016).

In short, the main purpose of this study is to explore the relationship between ownership concentration and the probability of financial distress, on 18 145 Portuguese SMEs between 2007 and 2017.

2 Data set

The data used in this study were obtained from the Bureau van Dijk SABI (Iberian Balance Sheet Analysis System) database for the period from 2007 to 2017. The sample comprises Portuguese SMEs from the manufacturing sector. The selection of SMEs was carried out in accordance with the criteria set out in Commission Recommendation 2003/361 / EC of 6 May 2003 on the recommendation of micro, small and medium-sized enterprises. According to this recommendation, firms are considered SMEs when they meet two of the following three criteria: (1) less than 250 employees; (2) turnover of fewer than 50 million euros; and (3) total assets less than 43 million euros. Regarding the fact that these belong to the manufacturing industry. The result of the application of these criteria generated a final sample with 18 252 firms.

Through the date of the current situation of the firm, it was possible to identify that only 75 of the 18 252 firms left the market in the period from 2007 to 2017. In this way, and despite the exit of a firm from the market and financial distress are different events (Gupta, Barzotto, & Khorasgani, 2018), in the model will be considered that the financial distress has the consequence of leaving the market. Thus, following the study of Gupta, Barzotto, et al. (2018), we consider that a firm is in financial distress when its EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) is less than financial expenses for two consecutive years, and current ratio (current assets over current liabilities) is less than 1 for two consecutive years. Although they use solvency (net worth over total debt) instead of the current ratio, the use of the latter ratio shows the ability of a firm to meet its short-term obligations. When this ratio is less than 1 the firm's short-term debts (i.e., debts to be settled within one year or less) are higher than the value of the assets with the highest liquidity, such as cash and cash equivalents and others that can be converted into money within a year or less. In addition, 107 firms were eliminated from the sample because there was no data on the financial debt for the period under analysis, resulting in a final sample of 18 145.

Since the main objective of this study is to explore the relationship between ownership concentration and probability of financial distress, we constructed the categorical variable Ownership, that assumes the values: 1 when there is more than one shareholder; 2 when there is only one shareholder, and 3 in case there is only one shareholder and this is also the manager of the firm. In our analysis, we control for firm size, region, and activity sector. From the literature review, and specifically based on the works of Gordini (2014), Mata & Portugal (1994) and Pérez et al. (2004) we built the variable Size, a categorical variable that takes the value 1 if Micro-sized firm; 2 if Small-sized firm; 3 if Medium-sized firm. This way, we will be able. To control for spatial and industry effects, i.e. to capture different geographic regions and economic activities' idiosyncratic influence on SMEs' survival, we included the variables Region and Activity Sector, respectively. Region is a categorical variable controlling seven regions according to NUTS II (Nomenclature of Territorial Units for Statistics): North, Algarve, Center, Metropolitan Region of Lisbon, Alentejo, Azores, and Madeira. Activity Sector is a categorical variable controlling 309 different economic activities among the Manufacturing Sector to NACE Rev.3.

3 Methodology

As an exploratory analysis, we first calculate the nonparametric estimator of Kaplan-Meier (1958) for the variable Ownership, and compare the survival curves between each category, by terms of the log-rank test. The Kaplan-Meier estimator is a non-parametric maximum likelihood estimator of the survival function, $S(t) = P(T > t)$. T is a non-negative random variable that represents the lifetime of a firm from a given homogeneous population. This estimator is a step function with jumps at observed times of the event (firm bankruptcy).

As previously mentioned, the proportional risk model of Cox is the appropriate choice for the type of analysis that is intended to capture the characteristics of Portuguese firms as Mata & Portugal (1994). This model allows us to consider data censorship (i.e., partial observation of the response, since we do not observe the total lifetime of a firm in the analyzed time window) and explains the time dependence on the risk function $h_i(t)$. The model is expressed as follows:

$$h_i(t) = h_0(t) \exp\{\beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_k x_{ik}\}.$$

This model assumes that the risk rate of any firm i at time t is the product of two factors: a baseline risk function $h_0(t)$ and an exponential linear function of covariates $\{\beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_k x_{ik}\}$.

were

x_{ik} represents the effect of the covariant k for firm i

β_k is the coefficient for x_{ik}

We analyze the time between firm creation and financial distress. However, as our period of interest is between 2007 and 2017, we consider in our model left truncation of data before 2007, since we do not have information on financial distress of the firms prior to that year.

There are several methods to check the validity of the proportional hazards' assumption. This assumption can be validated through a graph $\log[-\log S(t)]$ versus t . The curves obtained must be parallel. Thus, the proportional hazards model is inadequate when the curves intersect. For model robustness check we fitted the flexible parametric Royston & Parmar (2002) model to the data to verify if results altered considerably. For model prediction accuracy diagnose, the Harrell C statistic was calculated.

4 Results

From the 18145 firms analyzed, 43.47% registered financial distress. Of the 15 309 firms with more than one shareholder, we registered 44.0% in financial distress. Of the 902 firms owned by a single shareholder, 48.7% registered financial distress, and for the 1934 firms by a single shareholder that is the manager, 43.5% were in financial distress between 2007 and 2017. Subsampling by firm size, we accounted for 44.14% of micro-sized firms (of a total of 10868 firms), 40.47% of small-sized firms (of a total of 5580 firms) and 49.09% of medium-sized firms (of a total of 1697 firms) presenting financial stress. Analyzing the differences on survival probability by Ownership concentration categories, by means of Kaplan-Meier estimator and the Log-Rank Mantel-Cox test ($\chi^2 = 16.39$; p -value < 0.001) we confirm a statistically significant differences between risk curves, with firms owned by a single shareholder that is also the manager with less relative risk of financial distress. Fitting a multivariate Cox proportional hazard model considering Ownership concentration as explanatory variable and Size, Region and Activity Sector as control variables, we confirm that firms owned by a single shareholder that is also the manager with less relative risk of financial distress (Hazard Ratio = 0.636238, p -value < 0.001) comparatively to others. Proportional hazards' assumption validation and robustness check were validated, but not presented due to space restrictions.

5 Conclusions

In this study we analyze the effects of the concentration of the shareholder structure and the problems of agency “principal-principal” (firms with a shareholder vs. firms with more than one shareholder) as well as the problems of agency “principal-agent” (firms with a shareholder vs. firms with a shareholder and that this is also the manager) in the financial survival of Portuguese SMEs, making use of the Cox Proportional Hazard Model.

This type of methodology does not ignore the longitudinal factor of time, makes it superior to most static models that ignore the fact that a firm changes throughout its existence. Results show that ownership concentration is strongly related to the probability of financial distress for Portuguese SMEs, for the period under analyses. In particular, firms detained only by one shareholder that is also the manager face significant less relative risk of financial distress, compared to firms with a shareholder and firms with more than one shareholder. Thus, founding evidence on the negative relation between ownership concentration and financial distress. In line with agency costs arguments Jensen & Meckling (1976), our results confirm the idea that firms with undiversified shareholders face a higher probability of survival.

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PARALLEL SESSION 12

A CATEGORIZATION OF NON-VOLUNTEERS' MOTIVATIVES

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Extended Abstract

Abstract

This work aims to identify and categorize the main motives why individuals don't volunteer in NPOs. NPOs are always struggling for finding new volunteers to help the cause, so this work findings have important implications, both theoretical and practical. NPOs by gaining a deep understanding of potential volunteers can develop specific marketing and public relations strategies to attract volunteers to their causes. Filling a literature gap, this work developed a 12 motives for non-volunteering categorization, and 6 subcategories, which fit some categories but had different characteristics. Further, it was also found that men have lower interest in the volunteering activities than women, students are the group which identifies lack of time as the main motive for not volunteering and younger people are less interested in volunteering activities.

Keywords: NPO, non-volunteers, motives, volunteerism.

1 Introduction

The importance of NPOs (non-profit organizations) for several communities is undeniable. Dependent on subsidies and government support, a large percentage of Portuguese NPOs rely on volunteers' goodwill to participate in their activities in order to achieve their goals (Wu, Lo and Liu 2009). Therefore, volunteers are an important part of NPOs, and without them, many organizations could not function (Phillips and Phillips 2011). Despite the increasing number of volunteers, the percentage of volunteers in Portugal is still lower than the European average. Additionally, the number of NPOs has also been growing in the past years, so they compete to attract individuals who are willing to use their free time to help others. In a matter of fact, if an NPO understands individuals' reasons for not volunteering, it may develop specific programs for that public and stand out in the crowd. Research about volunteering motives is well developed in the literature. Altruism and egoism theories have pointed out volunteers' individual characteristics, such as willing to help others or wanting to feel good about them. Other reasons, such as to be asked, are identified by several scholars as motive to volunteer (Schondel and Boehm 2000; Sundeen and Raskoff 2000). Consequently, the objective of our research is to categorize the main motives for individuals not to volunteer and understand if there is any relationship between demographic aspects and motives for not volunteering. Therefore, this extended abstract starts with a brief literature review, followed by the research and methodology

2. Literature Review

NPOs are always struggling for finding new volunteers to help the cause. There is a lot of research which analysis the motives for volunteering and categorizations of volunteers' motives can also be found in the literature. Literature review about NPOs, volunteers and non-volunteers has shown that scholars have focused in understanding the motives for volunteering and characterizing volunteers. Several theories such as the VFI - Volunteer Function Inventory (Clary and Snyder, 1999) and SDT-Self-Determination Theory (Deci and Ryan 1985) helped explaining why people volunteer, but literature is very scarce to explain why people don't volunteer and what can lead individuals to do it. Motives related with organizational commitment, religious aspects or friends and family influence, may be important to make non-volunteers take the decision to volunteering. Despite that, there is lack of research analysing reasons for not volunteering.

Research about non-volunteers, in most papers, compares these individuals' characteristics with volunteers. Despite the motives pointed out by Sundeen and Raskoff, 2000 and Stein, 2011, scholars haven't proposed a categorization of motives for not volunteering. Individuals may not volunteer for several reasons. Some may not be interested on it, research point out personality as a characteristic of volunteer, some talk about 'altruistic personality', when researching motives to donate (Krebs, 1970; Piliavin and Charng, 1990). Other may not have information about it, lack time or even their health may not allow it. Factors such as age, gender, place they live, may all have influence on their decision to volunteer, or not. Further, we may not forget, that one of the reasons for donating and volunteering that is most pointed out by the literature is 'because they were asked to'. NPOs by gaining a deep understanding of potential volunteers can develop specific marketing and public relations strategies to attract volunteers to their causes.

The increasing number of NPOs and the lack of marketing knowledge amongst several of them, leads to the existence of incipient communication plans and, therefore, inexistent or inadequate public relations strategies. NPOs need to develop strategies to overcome financing problems, but also look at different stakeholders and understand how they can give the organization inputs to achieve their goals. Looking at non-volunteers as NPO public, as potential future volunteers, implies the necessity to understand what motivates these individuals and how are the relationships they have with NPOs. The definition of marketing objectives as well as communication objectives, may be much more adequate if NPOs develop a deeper knowledge about these stakeholders and, therefore, how their behaviour can be changed and how organization-public relationship can improve.

3 Research Methodologies

The main objective of our research is to categorize the main motives for individuals not to volunteer. And secondly, understand if there is any relationship between demographic aspects and motives for not volunteering.

Data was obtained by a questionnaire; in the case of our research the latent variables are motives for non-volunteering. In order to reach to respondent with different characteristics, such has geographical areas, age and professional status, it was administered an online survey. The questionnaire was also answered using pen and paper method, because the return rate is much higher using this strategy, as we could verify. Data collection occurred between February and June of 2015.

The questionnaire is organized in two different parts. The first part identifies the respondent concerning demographic characteristics and volunteering experience. The second part is dedicated to non-volunteers' motivations and aims to understand the ones that are mainly identified by the respondents. When researching for motives to volunteer several categorizations can be found in the literature. One of the most used is VFI (Volunteer Function Inventory), developed by Clary and Snyder (1999), which evaluates volunteering motives using a closed questionnaire, among others. Some authors have questioned the indiscriminate use of closed questionnaires for assessing volunteers' motivations (Allison, Okun, and Dutridge, 2002; Chacón, Perez, Flores, and Vecina, 2011). Closed questionnaires, in this context, can lead volunteers to classify motives shown in the items list, that weren't, in fact, why they decided to volunteer (López- Cabanas and Chacón, 1997). Further, volunteers may confuse the motives that explain why they have decided to volunteer with the expectations about being a volunteer and/or the consequences of being one. When individuals decide to volunteer there are situations that they expect to occur, but which may not have been a reason to do it.

A similar situation may happen to non-volunteers' motives. As explained before, in literature review, a categorization of motives for not volunteering could not be found. The use of opened questions to assess motives for not volunteering is much more costly to analyze and it involves a greater element of subjectivity, as it involves the researchers that must categorize them. Despite this fact, concerning that motives for not volunteering is quite scarce and that this research could allow the development of a categorization of it, we have decided to use open question to assess motive for not volunteering. Therefore, the first step of the methodology process refers to obtaining the answer to an opened question, explaining the reasons why participants don't volunteer. On the second phase, the categorization process was developed, starting with a theoretical list of the main motives pointed out in the literature was drawn and X motives were à priori identified. The responses given to the opened question by 520 subjects totalized 654, as some individuals pointed out more than one reason as asked. When sentences wouldn't fit the existing categories, another category was created for further analyse. After the second review of sentences distribution, it was analysed if some categories could be grouped in the same category, which happened in most categories. Finally, all the answers included in each category were reviewed one by one, with the aim to detect and correct possible categorization or coding errors.

4 Discussion and Results

Being an exploratory study, a convenience sample has been used. Therefore, results should be carefully analyzed. Most respondents were female (64,9%) with 31,1 years old average (SD=10,1). Respondents' age varies from 18 to 72 years old, and the majority lives in the district of Porto (81,7%). This result was expected because the researcher is from Porto and several paper questionnaires were distributed in that area (we are using a convenience sample as explained before, on 5.2. Additionally, 49,5% were employed, 38,9% were students and 8,7% were entrepreneurs. When interaction with NPOs is concerned, most respondents have donated money or goods to the NPO (53,8%); 28,8% have heard about the NPO in the media; 25,5% have bought charity linked and 25% know a volunteer on that NPO.

Nevertheless, it was obtained 12 categories of motives for nonvolunteering: Lack of Time, Lack of information/ knowledge, lack of contact, lack of interest, Skeptical about NPOs, lack of transportation, age, health problems, related jobs, family issues, lack of abilities and finally people who don't know the reason why. The subcategories identified resulted from different specifications that were considered to fit the same category but had different characteristics. The 6 subcategories are: Job schedule (as a subcategory of lack of time); Lack of information about NPOs and about volunteers (as subcategories of Lack of Information /knowledge); the two subcategories of lack of interest are related with the interest in the activities and lack of social value and, finally, it was added a subcategory related with previous experience, under the category of skeptical about NPOs, the reflect respondents who have tried to be volunteers before but ended up not doing it. Compared to some of the reasons pointed out in the literature a new category emerged from the research: skepticism about NPOs.

Most respondents (59,6%) pointed out lack of time (TM) as motive for never having volunteered, followed by CONT (lack of contact) (32,2%) and lack of interest in the activity (16,8%). The second goal of our research was to verify if there is any relationship between demographic aspects and motives for not volunteering.

Statistically, there are significant differences ($p < 0,05$) between gender and Lack of interest. Male respondents answered in a higher proportion to that motive (15,8%), comparing to female respondents. We may say that men show less interest for the volunteering activities, which is consistent to literature because the majority of volunteer are women. There are statistically significant differences between different occupations concerning TM and OTHER. Students answered in higher proportion the motive TM (45,9%) comparing to other respondents and none of the unemployed respondents pointed out Other motive for not volunteering. Students, more than employed or entrepreneur respondents, consider that lack of time is one reason why they don't volunteer. In Portugal, volunteering is not mandatory in Universities, neither has impact on student's access to specific Universities (contrary to what happens in other countries). If that was the case and especially if it was part of the school curriculum, many more students would volunteer, as time would not be a limitation. It was found a statistically significant association between age and lack of interest (LACK INT). Respondents who have chosen LACK INT (28,7%) are in average younger than the ones who didn't. In order to overcome this flaw, NPOs should underline volunteering activities that may be interesting to young people. If they could find activities attractive, or could understand what they can learn from them, maybe they would be more interested to volunteer.

5 Conclusions

The aim of our research was to develop a categorization of motives for non-volunteering. By analyzing the answers of 520 respondents we have obtained 12 categories and 6 subcategories of motives for non-volunteering: Lack of Time (subcategory: Job schedule), Lack of information/knowledge (subcategories: about NPOs and about Volunteers), lack of contact, lack of interest (subcategory: interest in the activity and lack of social value), Skeptical about NPOs (subcategory: previous experience), lack of transportation, age, health problems, related jobs, family issues, lack of abilities and finally people who don't know the reason why.

Finally, statistical differences were found between gender and lack of interest, as man are less interested in the activities; students point out lack of time as the main motive, more than people with other occupations and younger respondents have shown to be less interested in the activities.

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PARALLEL SESSION 12

THE STRATEGIC MANAGEMENT OF NONPROFITS ORGANIZATIONS (NPO)

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Extended Abstract

Abstract

Particular Institutions of Social Solidarity (IPSS), as non-profit institutions, have an important role to play in society and it will be relevant to develop innovative strategies applied to their management. This study aims to analyze the strategies that are being implemented in IPSS. The ISI Web of Science database was used to collect the articles and 197 articles related to the study, until 2017, were analyzed. The results show the importance of a deeper empirical study that will help to clarify the necessary change practices in IPSS needed for these institutions to adapt to changing environments. Non-profit organizations must be aware that they cannot have Human Resources as an obstacle to their strategy because they are their main assets and are not replaceable by other resources. However, it turns out that in non-profit organizations, recruitment, compensation and work, are not related to their strategy.

Keywords: Nonprofit Organizations; Strategic management.

1 Introduction

Nonprofit organizations cannot have human resources as an obstacle to their strategy because they are their main assets and are not replaceable by other resources. Although there are several studies on strategic management in nonprofit organizations, Miles and Snow (1978) have deepened the strategic management of human resources in this type of organization. Given the value and importance of strategic management tailored to NPO, Akingloba (2013) intends to alert nonprofit organization's managers to relevant factors for strategic human resource management, not neglecting the planning and implementation thereof. On the other hand, Brown et al. (2014) state that the success of nonprofit organizations is to use a method to identify the right people to the proper place in the organization.

Given the importance of the practice, of proper management in nonprofit organizations, Stone et al. (1999) concluded, in a study carried out, that further studies should be realized in order to assess the impact of different research and strategic elements for these organizations. Despite the contributions by previous authors, we have not been able to find a systematic review of the literature in the area of NPO and, as a field of research is never finished, much remains to be done. In this study we want to discover the existing gaps in the field of strategic management of the NPO and what contributions can still be made to value the effectiveness of management in these institutions. It is therefore intended to investigate the opportunity to improve the challenge posed to this type of institutions, and to understand what can be done, to improve the effectiveness of NPO.

The objective of this study is to analyze the strategies that are being implemented in this kind of institutions to improve their performance and to identify possible gaps, contributing to identify new and different strategies that allow them to face the next challenges effectively.

The structure of the article is composed, firstly, by a systematic review of the literature on this topic, secondly by describing the methodology, and thirdly, the conclusions are presented, and the contributions, limitations and future lines of research are indicated.

2 Literature Review

This review included studies focused on institutions of the third sector, in order to explore the role of NPO, as well as the methods of strategic management that they have been practicing. The electronic academic Web of Science database was searched without temporal limitations in April 2019. Akingbola (2006) concluded that in nonprofit organizations, recruitment, compensation and work are not related to their strategy. These results are inconsistent with the findings of Miles and Snow (1984) that human resource management (HRM) would reflect on strategic types of organizations. One possible explanation for the lack of relationship between HRM and strategy in nonprofits is that the Miles and Snow structure may not be ideal for these same organizations.

As a shortcoming, it is found that the lack of association between recruitment, compensation and industrial relations and the types of nonprofit strategy have implications for effective nonprofit management. Workers are attracted, motivated, and retained, mostly through the mission of nonprofits (Brown and Yoshioka, 2002). Human resources are the main assets of nonprofit organizations and, even more so than in any other sector, are not replaceable by other resources. Thus, these organizations must be aware that they cannot have HR as an obstacle to their strategy, but rather aligned with it. We can then argue that nonprofits should develop their strategy based on the competencies of their human resources.

Akingbola (2013) intends to alert managers of nonprofit organizations so that, by planning and implementing, they take advantage of the model that identifies relevant factors for the strategic management of human resources. Souder (2016), in his review, carried out research on strategic planning, management, development, dissemination and accountability, and found, at the level of research in strategic planning, some limitations, between the nonprofit objective for social good and goal for profitability. However, in the development context, he has found common communication strategies to attract individual and institutional volunteers.

Due to the limitations of economic theories and the nature of nonprofit institutions, researchers may follow Koschmann (2012), who called for the development of distinctive nonprofit communication theories. The research carried out by Weerawardena et al (2010), aimed to understand the need to build a sustainable company related to nonprofit organizations.

The results obtained suggest that the need for sustainability had a real impact on nonprofit organizations (NPO) forcing them to adopt a strategy oriented to all the activities in which they are inserted. First and foremost, these strategies will adopt a competitive attitude and proactive recognition of opportunities, minimizing the state's dependence on receiving funds and increasing internal management capacity. Secondly, there is an imperative need for our own sustainability, with a strong impact on the operational strategy, aiming at an efficiency in the improvement of revenues, for minimization and reduction of costs. Brown, Andersson, & Jo (2016) point out that the success of the nonprofit organizations is to use methods to identify the right workers for the job in the organization (Balduck et al., 2014).

AL-Tabbaa et al. (2014) aimed at advancing theories on nonprofit-business collaboration (NBCs) by providing a framework with a strategic issue from the perspective of nonprofits (NPO), whose framework is based on the three elements of the strategy as rooted strategy, management and change literature.

For future research, the authors refer to three specific areas:

- First, the need to conduct studies to compare NPO that have developed successful collaborations with unsuccessful NPO;
- Second, the suggestion that the factors are of equal importance for the development of an NBC strategy;
- Finally, they suggest that the NPO type can influence an NBC strategy. They safeguard, however, that in their article they only discussed the size impact: small vs large NPO.

Finally, they expect that the structure may also help a group of NPO or intra-industry alliances to collectively develop a strategic NBC. They give as an example to investigate whether intra-sectoral alliances would strengthen the "Strategic Position" of NPO.

Morris et al. (2011) mention there is a gap between research in entrepreneurial entrepreneurship using entrepreneurial orientation (EO) as a methodological tool, and the context of nonprofit organizations that use the same tool that, however, was not suitable for nonprofits. As this gap represented an important issue, they focused their study on nonprofit organizations, and did so for two reasons:

- First, because companies linked to the nonprofit sector are playing a major role in the supply of needs to society, as has never been observed at any time in history.
- Second, given the specific form of social entrepreneurship, in this type of organization, due to motivation and process of differences, based on results, which provide a basis that varies significantly from the form of entrepreneurship in the context of for-profit organizations that supports the vast majority of EOs.

However, they also suggest, that decision-makers in nonprofit organizations should balance the different opportunities to serve nonprofit organizations in relation to the social and financial objectives of the stakeholders. In conclusion, they say that nonprofit organizations represent a vital economic mechanism through which the unmet needs of society are met.

Manuel et al. (2011b) had as main objective to contribute to a debate around the propensity for nonprofit organizations to converge or diverge from profitable approaches to strategies and control practices. In terms of theoretical implications, the authors refer that, because it is a cross-sectional study, the results obtained do not allow an evaluation of the cause-effect relationship between the variables. But, still, it can be said that the results are consistent with the theoretical position adopted in the article. Regarding the practical implications, the authors point out that if nonprofit and commercial organizations are different, it is indisputable that lessons can be learned about the strategy and control of the private sector.

Finally, as Ostrower and Stone (2010) point out, nonprofits do not exist in a vacuum, and in larger organizations nonprofits policies and practices are influenced and must respond to internal and external contingencies. In conclusion, the authors argue that more empirical work can clarify the practices of change in nonprofit organizations, although there is a need to adapt to changing environments.

This study, according to Guo et al. (2011), contributes to the existing literature by providing rare empirical evidence on the prevalence in strategic human resource management (HRM) in nonprofit organizations and the organizational and contextual factors associated with such practices. The authors' conclusions are that there is substantial variation in the adoption of strategic HRM practices by nonprofits, more precisely, in organizations that have more paid and full-time human resources which are technically skilled and linked to the organization. It should be noted that younger organizations, educational organizations and organizations that do not have a dedicated HR team are more likely to implement strategic HRM practices. The idea that the dedicated HR team is negatively associated with the adoption of HRM strategic practices serves as a warning to leaders of nonprofit organizations that the HR function is expected to contribute to the organizational strategy and performance, then efforts must be made to include dedicated HR staff in the organization and decision-making process. The authors suggest several avenues for future research, however, and due to the objective of the article and data limitation, the possible relationship between the adoption of GFRH strategic practices and organizational performance was not examined.

There is a lack of consensus on how to understand and measure nonprofit performance (Forbes, 1998; Herman and Renz, 1999) and, according to this challenge, future researches should consider and test empirically the link between strategic practices of GRH and several objectives, subjective measures and organizational performance (Herman & Renz 1997). Stone et al. (1999) concluded in their study that studies are still needed to assess the impact of different and determinant research and strategic elements as well as performance results. Walk et al. (2014) investigated the perceptions of HR practices of HR managers and employees, from free welfare associations (FWAS), based on Caritas as the leading Catholic wellness organization. The authors recommend, for future research, to analyze the perceptions of HR practices of a greater number of employees and managers, using a quantitative assessment instrument, based on their findings and targeting the FWAS. They advise that the method to be used is a quantitative survey in order to be able to compare FWAS of different origins, size, wellness areas and other organizational characteristics that can influence the results.

The Waters (2009) case study is based on studying the discussion of the field of relationship management by creating scales to measure Kelly's (2001) management strategies and to better understand how these strategies affect the nonprofit organization. Kelly's (2001A) strategies detail specific nonprofit organizations that can be used to nurture stakeholder relationships, limited to the level of outcomes, which cannot be generalized beyond the organization's intent.

Manuel et al. 2011c) report that the existing literature has identified social capital as a valuable resource that can improve the effectiveness of an organization (Schneider 2009). In addition, social capital is a benefit that nonprofit organizations contribute to society in general (Huntoon, 2001). However, the process of reproduction of social capital within nonprofit organizations is still a gap. Although social capital is recognized to prosper both the organization and society, it has not been the subject of academic study until 2004 (King 2004). In his research, the author attempted to capture and structure the replication of the social capital process at the organizational level, with the objective of integrating it into a strategic analysis of nonprofit organizations. The goal of King's study (2004) was to promote a deeper understanding of how nonprofits actively and effectively generate social capital organizations.

Manuel et al. (2011c) aim to provide information on how management control systems (MCS), strategy relationship observed in for-profit organizations, can be applied in a nonprofit context. The authors mentioned several limitations to their research, which translate into opportunities for further research. First, they point out that their interviews are not a representative sample and, as such, it is too dangerous to generalize. Finally, they point out that in their research there has been no individual classification of the different industries, thus leaving an open window on future investigations, that is, to make a control relationship within nonprofit organizations, and a basis for investigating whether nonprofit organizations are actually doing the right things for the wrong reasons.

Manuel et al. (2011a) explored organizational, that is, structural, managerial and financial factors, which are associated with human service nonprofits. This article further investigates how structural, managerial and financial characteristics affect the adaptive tactics used by nonprofit organizations.

Green (2012) mentions at the conclusion of his study that, from his research, nonprofit community service organizations need to examine their economies from a value perspective. According Manuel et al. (2011a) in the last ten years, voluntary partnerships with for-profit companies have become an increasingly important issue for all nonprofit organizations.

3 Research Methodologies

In this section, we present the methodology used to carry out this study, which obeyed certain steps, mentioned in table 1.

Table 1 – Procedures for the elaboration of a systematic literature review

Steps	Procedures
1 ^o	Articles searched
2 ^o	Selection of articles identified with the topic of systematic literature review
3 ^o	Analysis of the information contained in the articles selected and of interest to the study
4 ^o	Reading of the retained articles
5 ^o	Results presentation

Source. Self-elaboration

For this review, the Web of Science database was searched without temporal limitation and with the combination of keywords "strategic management" and "nonprofit organizations". We identified 145 articles and focused the SLR on the theme and articles available. The non-temporal restriction was to achieve greater coverage and a greater number of articles, for the consistency of this review.

After the selection of the 145 articles we i) made the full reading of all articles; ii) their analysis and iii) and produced the presentation of the results. Table 2 shows the phases of the working method used

Table 2 – Method of work used

Phases	Procedures
1 ^a phase	Full reading of articles
2 ^a phase	Detailed review of all articles
3 ^a phase	Results presentation

Source. Self-elaboration

4 Conclusions

This section presents the results obtained. These results provide information on how resource fundraisers can try to regain confidence by focusing on specific management strategies to build confidence levels that donors feel about the organization. This SLR had as objective to analyze the strategies that are being implemented in this type of nonprofit institutions and to detect gaps, as the concrete case of the process and reproduction of social capital, within the nonprofit organizations.

One of the contributions of this article is that, through the results obtained, it helps to clarify the practices of change in nonprofit organizations. One of the limitations was the lack of association between recruitment, compensation and industrial relations, and types of nonprofit strategy, which translates into implications for nonprofit management effectively. It is suggested that future lines of research should take into account the role of the entrepreneur in nonprofit organizations. There is also an open window to, make a controlling relationship within nonprofits, and a basis for research, in order to know if nonprofits are actually doing the right things for the wrong reasons. It should also be noted that in nonprofit institutions that do not have a defined strategy. Finally, we leave the way open to investigate whether a certain advanced degree of commercial or nonprofit management leads to different results than advanced degrees in other fields.

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PARALLEL SESSION 12

COME IN, WHO IS IT?: THE PREDISPOSITION OF THE SOCIAL ECONOMY TO THE CIRCULAR ECONOMY

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Extended Abstract

Abstract

The main objective of the study is to analyse the predisposition of social economy agents to share resources. To answer the objective, we opted for a qualitative exploratory approach directed to managers and a quantitative exploratory approach directed at employees. The results showed that they have a significant economic impact on quantity, paid work and turnover (CESE, 2017). We have measured the relationship between the demonstration of interest in sharing and qualification appropriate to the function of managers and employees. It was verified the practice of informal and unregulated sharing of own and other resources, between local partners, without a model of knowledge management, assets, time, use/reuse and use. It is hoped that the study could serve as a scientific/methodological basis for a regional investment, R&D and partnership project, combining the interest in a smart region and applying the principles of circular economy

Keywords: Circular economy, social economy, smart economy, smart regions, sharing.

1 Introduction

The expression "Come in, who is it?" Is present in various works (Torga, 1941; Cabral, 2003; Morais, 2017), symbolizes transmontane values such as sharing and welcoming, which may explain the focus of the research work. Social organizations have in their genesis the sharing, the networking and the collaborative work, according to the Basic Law of the Social Economy (2013). Is it possible to evolve following the challenges of the economy? According to Taborda (2016) in the transport sectors (e.g. Uber or Riversimple), tourism (e.g. Airbnb), housing (e.g. co-habitation) and digital communities (e.g. Share) there is a growth of interest and users. Several case studies (e.g., Spowers, 2018, Recommerce, 2019) by The Ellen MacArthur Foundation (2019) point out that in the future, no sector will be immune to the advance of technology, concern about climate change, and the transition to the sharing economy at the expense of the economy of ownership of goods.

Somehow, the evolution of the economy advances to the combination of concepts that are related: intelligent economy, circular and sharing, which represent intelligent solutions to circulate at the highest level of utility and opens the possibility of having shared resources.

The purpose of this research is to understand if there is a predisposition of social economy entities to implement intelligent solutions that allow the management of their assets in a shared way, based on the circular economy, but above all with a regulated management through a bottom-up approach. The research aims to prove a possible relation between three concepts for sustainability of the territory under study, which may be the basis of the performance economy referred by Stahel (2010), based on science, knowledge and technology, and that is focused on design of innovative and more efficient digital services, resulting from the combination of raw materials, products, systems and intelligent solutions.

2 Literature Review

The key concepts considered pertinent to the theoretical framework are presented as follows.

2.1 Social economy

The social economy is constituted by organizations whose corporate purpose is the satisfaction of needs of general interest. It is present in the sectors of education, social services, health care, insurance, banking, agriculture, tourism, culture, sport, etc. Article 4^o of the Basic Law on Social Economy (2013) defined the types of entities to be incorporated, by legal nature, which are set out in the SEC 2010 (2013) and are identified in Table 1.

It is in this different form of economy that Demoustier (2001) sees characteristics in the "irreducible" people that advance, showing that one can undertake with others, cooperate in work, encourage one another in difficulty, invest one's own money without forget to be supportive. Associations, cooperatives and mutual societies are laboratories for the future that, without neglecting management and the question of money, are mainly concerned with the question of citizenship, social responsibility and the will to build a more humane society.

2.2 Circular economy

The concept has origins linked to various schools of thought, including performance economics. Stahel e Reday-Mulvey (1981) defend the vision of an economy in cycles, its impact on job creation, economic competitiveness, resource reduction and waste prevention. Responsible for the term "cradle to cradle" Stahel (2010) states that circular economy should be considered a framework: a generic concept that is based on specific approaches around a set of principles.

The Ellen MacArthur Foundation defines circular economics as a restorative and regenerative design economy, and that it intends to keep products, components and materials at its highest value and utility at all times. This concept tries to reproduce, in the productive process, what nature has done millions of years ago, in line with the observation of the french chemist, Antoine Lavoisier "in nature nothing is created, nothing is lost, everything is transformed" (Lemos, 2018).

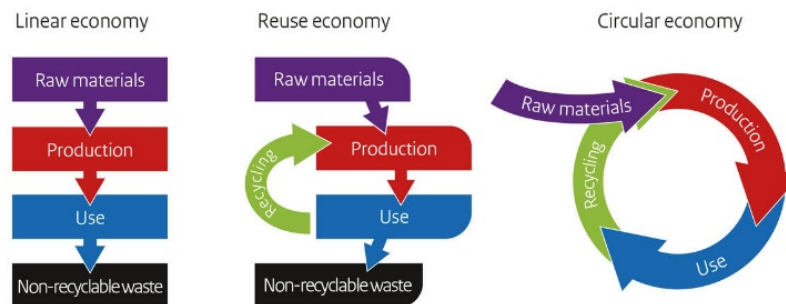


Figure 1: Transition between linear economy and circular economy. Source: Circular Economy Portugal (2019).

2.3 Smart cities

Komninos (2002) states that the concept when it emerged did not distinguish cities from intelligent regions. These should not be limited to the digital environment and to web platforms that provide services or information. They must take advantage of the interaction of citizens and the advantages that this interaction provides, through all the technology that facilitates interaction. That is why they add three fundamental areas of action in which the main objective is to create conditions for sustainability, improve the living conditions of the population and foster the creation of a smart and creative economy through management based on data analysis.

3 Research Methodologies

3.1 Study objectives

In order to achieve the general objective, four specific objectives were defined:

1. To analyse the economic impact of the organizations that make up the social economy, based on published data;
2. To verify if the interest in sharing is related to the skills that the agents have, based on their own information, that leads to the implementation of a training/information strategy;
3. Analyse historical behaviour on resource sharing, based on testimony from relevant stakeholders;
4. To verify the interest of social economy entities, in sharing resources among themselves, obeying the principles of circular economy, and that lead to a common strategy of action, based on testimonies of those in charge of the organizations.

For the first specific objective, a bibliographic research was carried out, in Portugal and in the European Union, leading to the identification of the 180 entities of the study. For the second, a survey was carried out on the employees of the 180 social economy organizations, through specific software, for the purpose of creating the questionnaire, analysing and processing data. It was shared with potential respondents through a short text of call for participation, ensuring anonymity and confidentiality in both the collection and in the treatment and conservation of data in compliance with the GDPR. For the remaining two objectives, exploratory interviews were carried out with the top managers of the organizations that are based in the territory.

In the bibliographic research no study with coincident objectives was identified, which relates the three concepts. As the circular economy is not a research area, some papers are focused on green economy, natural capital, recycling, reuse of resources and initiatives of the profitable sector, but few on the sharing in the circular economy. Studies carried out by the CESE (2017) on the social economy show the social and economic importance of the entities that comprise it, but studies with examples of regulated resource sharing are not known. On the other hand, there are publications (e.g., Komninos, 2002, Hollands, 2008, Selada & Silva, 2013, Pinto, 2017) on smart cities, smart activities and initiatives, but no studies have been identified on benefits of sharing service in the non-profit sector.

3.2 Definition of the population for quantitative and qualitative research

The bibliographical research focused on the key concepts and led to the typification of the entities of the social economy of the Terra Quente transmontana sub-region, to define the population to be surveyed. Notwithstanding their non-profit nature, the social economy operators are organised according to the SEC 2010, according to Table 1.

Table 1: Social economy operators by institutional sector of the European System of Accounts 2010.

Institutional Sector SEC 2010	Social Economy Companies and Macroeconomic Organizations
Non-financial companies (S11)	<ul style="list-style-type: none"> - Cooperatives (workers, agrifood, consumers, education, transport, housing, healthcare, social, etc.) - Social enterprises - Other company-based associations - Other private market producers (some associations and other legal entities) - Non-profit institutions serving non-financial organizations of the social economy - Non-financial corporations controlled by the social economy
Financial companies (S12)	<ul style="list-style-type: none"> - Credit unions - Mutual insurance companies * - Insurance cooperatives - Non-profit institutions serving non-financial organizations of the social economy
Families (S14)**	<ul style="list-style-type: none"> - Non-profit institutions serving limited-size families
Non-profit institutions serving households (S15)	<ul style="list-style-type: none"> - Social action associations *** - Foundations of social action *** - Other non-profit organizations serving households (cultural, sports, etc.)

(*) Except for organizations managing the social security system and, in general, mutual societies whose membership is compulsory, or which are controlled by companies in the non-social economy.

(**) The family sector (S14) includes individual entrepreneurs and joint-stock corporations without legal personality that do not belong to the social economy. It also includes non-profit organizations of limited size that are not part of the social economy.

(***) Non-profit organizations with membership and voluntary participation and strategic and functional autonomy, the purpose of which is to pursue social welfare objectives through the provision of goods or the provision of social services or merit free or at prices that are not economically significant, to persons or groups of persons who are vulnerable, socially excluded or at risk of exclusion. These organizations constitute the third sector of social action, which is obviously part of the social economy.

Source: Adapted from SEC 2010 (2013).

According to CESE (2017) in the last decades both academic institutions and national statistical institutes and governments have been working towards the need for statistics to gauge the weight of the social economy in the EU's 28 MS. CIRIEC (2006) developed a methodology, at the request of the EU, of the Manual for the preparation of satellite accounts of social economy enterprises, in parallel with the United Nations Handbook on Satellite Accounts for Non-Profit Institutions.

In Portugal CASES and INE released the results of the Social Economy Satellite Account, with data from 2013. The data confirm the of the sector, not only in employment and wealth, but also social, pointing out that many those organizations play an important role in the social balance in the fight against poverty and the territorial balance (INE, 2016).

The representativeness in the Terra Quente Transmontana was verified with information from national entities (e.g., GEP/MTSSS, 2016, DGSS, 2019, CASES, 2019) and locations through each of the five municipal social networks, where the entities of the sector (municipalities of Alfândega da Fé, Carrazeda de Ansiães, Macedo de Cavaleiros, Mirandela and Vila Flor).

It was reported to the GEP/MTSSS (2016), through the Single Report, 1,579 companies of different legal natures, which have 7,965 employees on their staffs. This source identified 86 entities employing 1,602 workers but includes only those who report information or who have a staff. They represent 5.4% of companies that comply with the legislation, reporting the number of employees, which represents 20.1% of the employees in 2016.

On the other hand, 62 registered Houses of the People, Cooperatives and IPSS were identified in the DGSS (2019). The number of social economy entities registered in Social Security, are distributed as follows, by municipality: 23 (37%) in Macedo de Cavaleiros, followed by 16 (26%) in Mirandela and 14 (23 %) in Alfândega da Fé with 14 (23%). Carrazeda de Ansiães and Vila Flor, presented 7 (11%) and 2 (3%), respectively. This source only includes those who have registered, and are left out those who do not have social facilities, or reason that exempts registration

At the same time, the accredited cooperatives were consulted at the CASES Portal (2019). It was identified eight cooperatives accredited in the study region: 3 in Macedo de Cavaleiros, 3 in Mirandela, 1 in Alfândega da Fé and 1 in Carrazeda de Ansiães. This source made it possible to identify and quantify the number of accredited cooperatives, but does not include those who did not credential, either because they did not meet the credential requirements, or for another reason.

Finally, it was identified the entities of the regional social economy, by municipality, that are part of the Local Council of Social Action, from Terra Quente Transmontana Social Network. It was considered to be the most comprehensive local platform for the object of study. For this purpose, the five municipalities of the region under study were consulted. Figure 2 represents the 180 entities distributed per municipality.

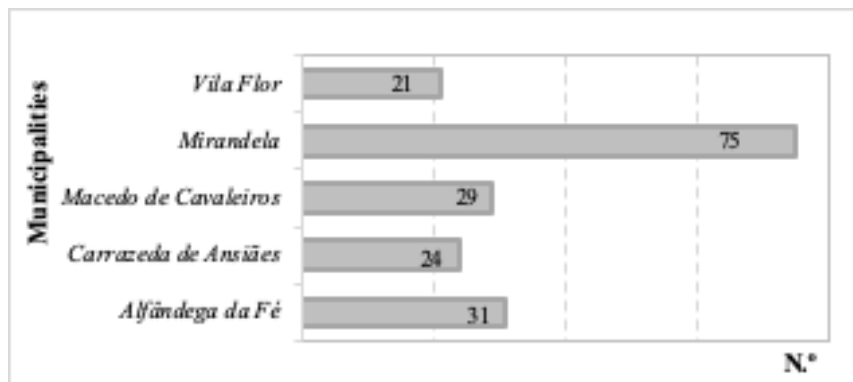


Fig. 2: Number of entities that belong to the Social Network per municipality.
Source: Municipalities of Terra Quente Transmontana.

4 Discussion and Results

The research reached the proposed objectives insofar as it allowed to determine the predisposition of the social economy agents for the management of shared resources that work in the region, which is the general objective of the present work. It could be concluded that this predisposition exists. Given the first specific objective, it was possible to conclude that social economy organizations have a significant economic impact, both at national and regional level, as well as in quantity, paid work and turnover.

It was not possible to conclude that there is a direct relationship between demonstration of interest in sharing and competencies of employees (second objective), once they were adequately qualified for the functions they occupy, they know how to identify the aspects in which the organization can improve, and are interested in sharing resources and knowledge through management models.

The qualitative study made it possible to analyse the behavioural history of organizations on the sharing of resources (third objective), and it can be concluded that there is a practice in sharing informal and unregulated resources between themselves and others without any form of management in terms of time, use, reuse and use.

Regarding the fourth specific objective, it can be concluded that the studies corroborate the interest of social economy entities in sharing resources among themselves, obeying the principles of circular economy, and that lead to a common strategy of action.

In the course of the present investigation, the interest of the agents in knowing the subject and participating in an effective way was evident: the first contribution is the awakening to the interest about sharing. On the other hand, the reflection that the subject raises in the respondents on the predisposition for the sharing in the organizations, is the second contribution, because it can stimulate new behaviours and new attitudes that could have implications in the normal operation of the organizations and in the management of the resources.

In the context of creative resources, namely the use of fact sheets, it was pertinent to explain the research topic in an appealing way and was considered as a tool to raise awareness among the interlocutors for the application of the principles of circular economy. It was the third contribution to the understanding of this concept, since the great majority considered its application limited only to the scope of the use and reuse of natural resources. The fourth contribution was the self-assessment of the employees and managers as to the organization's operation, which emphasizes the importance of improving their positioning and betting more on the image they project inside and outside the organizations

5 Conclusions

The main conclusion of this ongoing research work allows us to assume that it is possible to join efforts to reduce social asymmetries and to recognize that the sharing of knowledge and management practices can be a solution for the territory. Given the results obtained, social economy entities can design and implement a resource management model through a management platform, which provides a rental and sharing system, favouring the reuse and refunctionalisation of resources, in order to be economically more efficient and sustainable.

It is suggested to focus on the qualification of professionals for the activities of animation of people with dependence on third parties, in the different social responses existing and in the different age groups. This is because there are social and private facilities and equipment, but there is no articulation between social partners to promote leisure, recreation and social activities that promote the social integration of dependent people and active aging. It is also suggested that the articulation incorporate social responses for the families of dependent people, promoting the permanence in the family. It is well known that the introduction of new behaviour of social causes has a greater impact when it is carried out by young people. It would be useful to promote these behaviours through an awareness-raising campaign for the pooling of resources in the grouping of schools through Information and Communication Technologies. And, multimedia resources, or materials that can be manipulated for children attending primary school, 2nd and 3rd cycle of basic education and for young people who attend secondary education in thematic clubs under themes such as innovation, entrepreneurship, circular economy.

In the analysis of investment incentives in the structural programs of the Community Strategic Framework 2014-2020 it is possible to identify investment opportunities that prioritize the merits of the applications when they demonstrate the intelligence of the territories in the use and reutilization of the resources at their disposal. This reality makes foresee a perfect relationship between a smart region and the application of the principles of circular economy. Likewise, analysing the support programs of Portugal 2020, and RIS3 (2015) it can be verified that the resources and assets of the territories are valued when they demonstrate innovation in the territories and the impact on public policies. The outline of an investment project promoted by a formal partnership between the organizations of the social economy of Terra Quente Transmontana, can meet the requirements to be considered as an example or a pilot project, resource management, through a platform.

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PARALLEL SESSION 13

ENCOURAGING INTERNATIONALIZATION AND SUSTAINABLE COMPETITIVENESS IN CONSTRUCTION: A PRELIMINAR APPROACH IN PORTUGAL

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Extended Abstract

In a world of continuous changing, the liberalization of international trade has been the answer to the survival of many organizations. Companies operate in a large, highly competitive and demanding market, with new players and new business models. They cannot “just be” in the market as challenges are huge and sustainability is required. This new framework is a threat to companies’ survival but at the same time provides incalculable opportunities. Nothing is the same as before and companies need to find new ways of competing in the global market. Internationalization emerges as one of the business responses to the challenge of globalisation (Dias, 2007) and internationalisation processes are one of the most effective ways of developing and enhancing competitive advantages, as they promote the international competitiveness of the company (Root, 1994). In the process of internationalization, companies go through several phases and may adopt a more ethnocentric orientation (international company with domestic mentality), a more polycentric orientation (multinational company, which takes into account national differences) or a mixed orientation (global company). The last phase of the internationalization development corresponds to what has been called a transnational company (multinational company that adopts a global vision and that has in mind the local differences) (Teixeira & Diz, 2005).

Response to the various dimensions such as “what?”, “how?” and “where?” to internationalize should be analyzed, as well as perceived the “internal” dimensions, corresponding to the intrinsic characteristics of the company itself. Several approaches can be used to explain the behaviour of companies and the different adopted internationalization strategies. The perspectives that can be developed to explain the development of international trade are, among others, diverse and may include the country’ competitive advantages, the life cycle of a product in international trade, the technological difference, the endowment and differentiation of factors (Dodgson, 2018). Internationalisation, i.e. the management of commercial operations in foreign countries, contributes to the company’ sustainable international development, reduces its dependence on domestic markets, improves its economic and financial performance and competitiveness, creating conditions for long-term sustainability.

However, this process is also associated with several risks and costs that may lead to failure, and it is essential to define a solid strategy and to study the host market, culture, consumer trends, competitors and the consideration of the advantages and disadvantages associated with the various ways of entry (Matias, 2015). According to Piercy (1981) internationalization is seen as a movement of the company's operations out of its country of origin. This definition is complemented by Welch & Luostarinen (1988) who define internationalization as the increase of the organization's participation in international operations. On the other hand, Welford & Prescott (1994) refer that expansion is one of several growth strategies. Calof & Beamish (1995) consider that internationalization is, among others, a process of the organization's operations (strategy, structure, resources, among others) adjustment to international environments. Meyer (1996) argues that internationalization is the process through which a company increases the level of its value-added activities outside its country of origin. For Freire (1997) internationalization consists in the extension of its product-market strategy and vertical integration to other countries, which results in a total or partial replica of its operational chain. There are several definitions of internationalization based on two perspectives, one "from the inside out", where we consider exports, foreign licensing and foreign investment, and one "from the outside in", where we consider imports, acquisition of foreign technology and foreign investment (Simões, 1997). However, internationalisation cannot be seen as a process of "increasing progression", but rather as a phenomenon of setbacks in which organisations can "de-internationalize" themselves, either by stopping working on a product, either by giving up on foreign direct investment and refocusing on the export modality, or by reducing their international activities (Chetty & Campbell-Hunt, 2001). From an operational point of view, Harris & Wheeler (2005) define internationalization as the process in which an organisation sells its products/services outside its home market, thus developing external markets. It is the most complex strategy that the company can adopt (Fernández & Nieto, 2005) and its decision is a corporate strategy because it means a reformulation of the company's activity as it involves the introduction of new business areas from a geographical point of view (Martín & López, 2007).

There are several reasons for internationalization, including access to skills, access to cheaper or reliable resources, avoidance of taxation or import contingent, response to the movement of competitors, maintenance or reinforcement of the relationship network, increase in market share and higher return on investment (Teixeira & Diz, 2005). Five categories are pointed out as motivation for the internationalization of companies, including internal aspects of the company, market characteristics, relations with (international) customers, access to resources abroad and government incentives (Simões, 1997; Teixeira, 2011). The internationalization decision requires a prior assessment (Ferreira, et al, 2010) and it is essential to understand in advance whether internationalization will bring potential benefits to the company or not. It is necessary to understand if the company has the talent and the necessary capacity to sustain an international business, or whether it should adjust any gap with internal training of employees or even resort to new hires. A correct evaluation of the cost-benefit ratio should be made as well as the internalization costs (initial investment cost, communication and coordination cost). In addition to the internal factors, Teixeira (2011) states that organizations should be aware of potential problems and disadvantages in the markets where they intend to internationalize. It is indispensable to pay attention to political risks, i.e. to understand if the country is facing a scenario of political instability, if there is a risk of terrorism, if the state intervention in the economy is strong and how the official entities act. It is also required, among others, to pay attention to economic risks (which are somehow related to political risks) such as legislation on the tax burden, transparency of profits, labour laws, competition regulation' aspects. Also financial risks, in particular associated with the exchange rate risk that different currencies in different countries may cause are important to study. Finally, it is necessary to pay attention to management risks, which include the various risks that the company has to face when entering a new market, such as cultural differences, language, customs, consumer preferences, among others (Sousa, 2019). Management risks, in particular management in different cultures, languages and/or customs, require prior preparation on the part of companies to start their process of internationalization.

According to Cox (1993), understanding the effects of culture on human behaviour is fundamental to the success of an organization. Culture is something shared by all or almost all members of a social group, something that is transmitted from the older members of society to the younger ones, something that shapes behaviour (laws and customs), or structures someone's perception of the world (Adler & Gundersen, 2007). Both can either include tangible aspects as symbols or technologies, and can include intangible aspects such as beliefs, ideas and values that constitute the content of a culture. In this context, culture represents an important role in understanding society's norms and values, providing important opportunities for creativity and change. The pattern of one culture's own behaviour may seem strange to other cultures. (Giddens, 2010), so in a process of internationalization it is necessary for the company to adapt itself to the culture of the new country, in order to generate a sustainable relationship (Ratten et al., 2019). However, the interaction with new cultural media requires the learning of a set of intercultural communication skills that goes through three phases, namely: (i) awareness, which consists of recognizing the other culture; (ii) acquisition of knowledge, which consists of knowing the other culture and (iii) acquisition of skills, which consists of practicing the other culture (Hofstede, 1991). In summary, it consists of recognizing and applying the symbols, heroes and rituals of the other culture, and feeling at ease in this new medium, in order to feel capable of solving the problems.

In a business context marked by a strong international presence (and in the case of civil construction for the execution of projects in other countries) not only those who are working abroad are exposed to the need to deal with cultural differences, but all those who have some international responsibility, from the manager who does business abroad, to the receptionist who receives a foreign client (Schneider & Barsoux, 1997). It is necessary to seek to develop ties so that sustainability relationships can be created for the development of future businesses. Sustainability, a buzz word, recognized in the literature and published by the World Commission on Environment and Development (WCED) and released by the Organization of United Nations (Júnior; Fontenele & Faria, 2008). Being emerged from the concept of sustainable development, sustainability means being able to meet the needs of present generations, without compromising the needs of future generations.

In this sense, sustainability is a commitment to the future. It is not a goal that can be achieved, but a route that organizations must travel to search the best solutions to humankind problems, whether they are economic, social or environmental (Santos, Félix & Carvalho, 2009). It can be manifested through actions that support the management structures of organisations (Junior, et al. 2008), and should be economically profitable, environmentally correct and socially responsible. The concept refers to actions linked to values, objectives and processes that are designated by organisations, with the purpose of creating economic, social and environmental value. Lisbon Strategy (2000) mentions sustainability and innovation as two key factors for achieving long-term competitive advantage, since "we are in a context of uncertainty that is being faced by nations, regions and companies, at least in part, through sustainable innovation strategies" (Vilanova & Dettoni, 2011, p. 13). As a consequence, companies that maintain sustainable investments in a strategic way and with a long-term vision may have a competitive advantage of shielding in relation to the effects of the crisis (Claro & Claro, 2014). The investments linked to the core business of the company that are aware of the limitations and the existing environmental and social problems refer to strategic sustainability (Kramer & Porter, 2011), and take into account the environmental and social problems to transform it into business opportunities (Hart & Milstein, 2003). By minimizing costs and risks from excessive consumption, pollution and waste generation, they improve the use of resources and generate generalized gains in business efficiency.

Taking into account the previously mentioned and aiming to identify the used strategies by construction companies located in the north of Portugal in their internationalisation process, this study seeks, in a preliminary approach and through the use of a qualitative methodology (i.e. conducting a convenience study using semi-structured interviews with several managers of companies in the sector) to understand the cooperation strategies used in the internationalisation process, as well as to understand whether the managers of companies are familiar with strategic management tools. This study should allow a better understanding of the internationalization decisions and sustainability domains by some companies in the construction sector in northern Portugal. From an interdisciplinary perspective, this study presents a set of contributions to strategic management and sustainable development. At the end of the study, some limitations will be identified and some guidelines for future research work will be presented.

Keywords: culture, competitiveness, local development, internationalization, sustainability.

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PARALLEL SESSION 13

THE INTERNATIONALIZATION OF FOOTBALL: A BIBLIOMETRIC ANALYSIS

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Extended Abstract

Abstract

The context of the markets' globalization requires the organizations' need to develop abilities to conquer new markets and to compete in the domestic market. In football, the internationalization has transformed clubs into true multinationals, given the strategy development of sport marketing. Considering this subject's importance, both in academic terms and to managers practices, this article aims to identify the way in which the football brand is globally implemented at the international level. As specific objectives: a) to describe how this research field is organized in terms of publications, authors and sources (journals); b) to identify the main terms and definitions used; c) to discuss how the literature referred to represents challenges (opportunities and difficulties) for the scholarship related to the football internationalization.

Keywords: Internationalization, Brand, Football, Bibliometrics.

1 Introduction

Global interest in sport has been encouraged through mega sporting events, such as the Olympic Games and the Football World Cup (Rowe, 2003). Its recognition at a global level is perceptible in the revenue, management and entertainment spending (Hunter & Mayo, 1999). This popularity has made sport, as a business, to offer tremendous revenue-generating potential on a global scale for all parties involved (Klayman, 2009). In particular, one of the most popular sports and with fans worldwide is the European football, also known as soccer. Over the years, football has gained prominence until it became the current power (Kasznar&Graça Filho, 2012), being considered the most popular on the planet (Stølen, Chamari, Castagna, & Wisløff, 2005). Due to the growing importance of the football industry, sports organizations have become brands (Şener e Karapolatgil, 2015).

Thus, modernizing the club management is the main weapon to win and/or maintain a prominent position in this new sport's configuration, in which not only the titles are in dispute but also the investments and the financial revenue, originated in the commercialization of television rights, membership dues, player sales, ticket revenues for the games, among others (Albino, Carrieri, Figueiredo, Saraiva, & Barros, 2009).

The globalization and technological advances have allowed business opportunities for sports organizations, traders and entrepreneurs involved in sport. Sport has become increasingly marketed and internationalized with greater ease (Bauer, Sauer, and Schmitt, 2005), as a result of investments in sports marketing. One of the determining factors has been the social media proliferation, which has significantly affected the way people communicate, share information and make decisions (Qualman, 2009).

Therefore, the objective of this study is to examine the existing publications related to the soccer brand, identifying its main authors. Above all, it is intended to identify whether the football brand is globally well implemented internationally. It was considered important to start the study with a literature review, identifying the main terms and definitions used by the authors and the different approach perspectives, as a starting point in the choice of research topics. Next, a description of the research methodology and configuration was performed. For that, the VOSviewer software was applied, which allowed not only to present the most cited authors by the researchers as well as the division into three clusters. The clusters found allowed to identify the main literature tendencies on the football internationalization. Finally, an analysis of the clusters was implemented and the links between the three. At last, the conclusions are presented, closing the article with the limitations and suggestions for future research.

2 Literature Review

Sport has a cross-cultural ability to attract different generations of people and from various geographical locations. It is now possible for a growing number of people to attend sporting events online, which has helped to globalize a variety of sports, including cricket, football and surfing (Ratten&Ratten, 2011).

With the general trend of economies towards internationalization, the economic development of Eastern European countries, China and India, along with their large population, sports managers actively seek new markets and focus their efforts on the international marketing to attract more people to professional sports leagues. In addition, the declining birth rates and aging populations in Northern Europe and the United States have encouraged professional sports leagues to focus on these regions (Ratten&Ratten, 2011).

Sport has been studied from a number of different academic disciplines, including psychology, economics and marketing, though only recently it has been discussed from a business paradigm (Ratten, 2011). One of the most important assets of a sports organization is its brand (Bauer et al., 2005). The idea of managing a team as a brand has become a dominant paradigm in the sports market (Doyle, Filo, McDonald, and Funk, 2013; Gladden & Funk, 2002). Sports teams generate millions of dollars in ticket sales and merchandising, and much of that derives from the brand (Ratten&Ratten, 2011).

In the sporting context, brands have a deep and symbolic meaning (Biscaia, Correia, Rosado & Ross, 2013; Boyle & Magnusson, 2007; Funk, Ridinger& Moorman, 2004; Koo, Quarterman & Flynn, 2006), acquired through affiliation with teams and individual athletes (Antil, Burton& Robinson, 2012). Danes, Hess, Story, & York (2010) suggest that there is a general consensus that "the brand image is a mental construct that consumers form based on their connections and associations with the brand". 08).

The brand image is then said to allow consumers to easily identify the brand in the market (Alwi & Kitchen, 2014; Arai, Ko, & Ross, 2014; Grohs & Reisinger, 2014) and to help mitigate any “pain” in the decision (Hernandez, Han, & Kardes, 2014; Liu & Liang, 2014; Pfister & Böhm, 2008).

Sports managers are using internationally interactive marketing means to connect with consumers in real time. Mobile phones, tablets and smartphones allowed fans to watch sports games interactively encouraged by social networks. The innovative technological media, enabled by Web 2.0, allowed marketing to be more interactive and socially complex (Cooke & Buckley, 2008). Social networks, such as Facebook and Twitter, have encouraged marketers to target consumers, technologically savvy (Junco & Mastrodicasa, 2007). According to Shang, Chen, & Liao (2006), experiences in a virtual community, such as a social network, can be a significant part of the consumer experience of a particular brand. Specially, since the opinions exchanged between members of a consumer community (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004) are considered as a form of Word-of-Mouth: word-of-mouth (eWOM), they can have an impact on the customers’ attitudes and behaviours. Social networks are increasingly seen as an additional marketing channel through which companies can communicate or interact with their customers and potential customers (Gummerus, Liljander, Weman, & Pihlstrom, 2011).

Among sports, football is considered the most sponsored sport, being characterized as a multimillionaire industry (Bennett, 1999; Chadwick & Thwaites, 2005; Rosson, 2001). One of the main benefits of sports sponsorship is the brand’s television exposure (Jensen, 2012), which is a valuable asset for brands seeking to increase their fan base beyond traditional geographic boundaries (Ratten & Ratten, 2011).

Moorman, Willemsen, Neijens, & Smit (2012) state that the involvement with a football game leads to greater attention and recall from the game’s commercial side. Similarly, Wakefield, Becker-Olsen, & Cornwell (2007) argue that highly involved consumers are more willing to include themselves in the active processing of information and therefore are more likely to pay attention to sponsorship exposure. A sponsor of an individual team or athlete is more likely to be reminded if that team (or athlete) is performing well, as fans focus their attention on the players during the broadcasts and, thus, may be able to identify a sponsor whose logo appears on a sweater (Walraven, Bijmolt, & Koning, 2014). Smith et al. (2008) investigate the relationship between sports sponsorship and customer buying intentions. The results show that the fans’ passion and the sponsor’s perception of integrity can create buying intentions. Jensen & j. Cobbs (2014) argue that the exposure to sponsorship, during sporting events, creates brand awareness among people and leads to the creation of equity brand, which is a business goal for most companies

3 Research Methodologies

In this study, we will only be doing the first approach (quantitative analysis), leaving the possibility of later qualitative studies in the open, that this bibliometrics database allows. Data were collected in May 2017 from the following indexes: Science Citation Index Expanded, Social Sciences Citation Index, Arts and Humanities Citation Index, Conference Proceedings Citation Index - Science, Conference Proceedings Citation Index - Social Science and Humanities. It should also be noted that the research was performed in the Web of ScienceTM Core Collection, applying the keywords “Football Brand” or “Internationalization”, simultaneously, as research topics. The research returned 103 articles with publication dates between 2006 (one article) and 2017 (six articles).

4 Discussion and Results

According to the databases used in this study, the first research study on Football Internationalization was published in 2006, by Burke (2006), in Forbes, a quartile 1 magazine, since 2008 to date, and whose impact factor is 0.861. The latter was published in 2017, by Harris, Skillen, and McDowel (2017), in Sport in Society, a quartile 1 magazine, since 2008, and whose impact factor is 0.520.

In the period between 2004 and 2017, which is the period where the 103 articles in this study database are included, the number of publications never reached ten, until 2012; since 2013, it already exceeds ten and reaches, in 2016, 25 publications. In a more detailed analysis, we verify that, until 2006, there are no publications; for the period between 2006 and 2009, the number of publications has grown considerably (80%). In 2013, and in comparison, to previous periods, the number of publications increased significantly (93%), having fluctuated from this year and onward. In 2015, 19 publications were registered and, in 2016, there is a new increase (24%), compared to the previous year, with 25 publications registered. There seems to be a tendency for the increase in publications on the Football Internationalization area, since 2014.

Although the average evolution of the number of publications tends to be positive, which can be confirmed in Figure 1, until 2010, the growth is slow; as of this year, the growth is remarkable, although with oscillations, the maximum exponent happens in 2013, 2015 and 2016, with 25 publications. There seems to be a trend towards an increase in publications, also in 2017, on Football Internationalization, since, in the first quarter, 6 publications are registered.



Figure 1 - Number of publications' evolution in Football Internationalization (2004-2017).

Regarding the Top 10 countries that have published the most in the Football Internationalization area, the United States of America, England, Germany and Brazil stand out, with 31, 15, 12 and 9 publications, respectively, corresponding to 33%, 16%, 13% and 10%. That is, more than 72% of the publications, in the period considered, were registered by these 4 countries, followed by Australia, with 9%, and Canada, with 5% (Figure 2). Productivity in Portugal, with 5%, and Israel, with 4%, surpasses the Netherlands and the United Kingdom, both with 4%, among the ten countries that published the most during the study period.

Publications by country

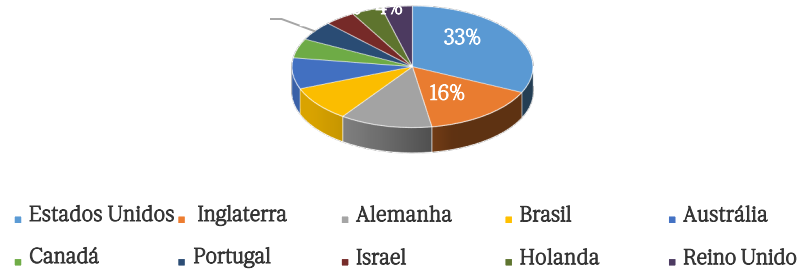


Figure 2 – Publications by country.

In this ranking, we only selected the first 10 countries of about 24, with Portugal in the seventh position. After we obtained the 103 articles, we applied the VOSviewer software, version 1.6.5, to design and visualize bibliometric maps that allow us to detect the most cited authors by the researchers in our database (van Eck e Waltman, 2016). This software also allowed to obtain clusters and reference networks, according to the applied objective and methodology (Waltman, van Eck, and Noyons, 2010). Figure 3 presents the most cited authors by the researchers who wrote the articles of our database under study.

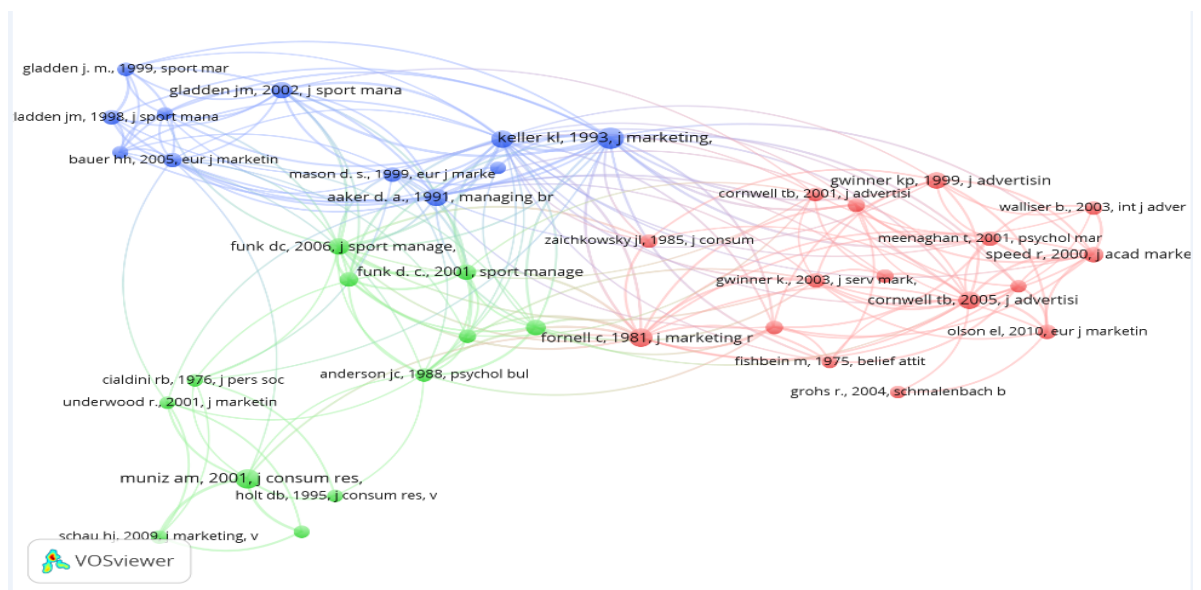


Figure 3 – References' co-citations.

We can also verify, in Table 1, in a clearer way, the five most cited authors in each cluster and their respective denomination.

Table 1– Clusters resulting from the co-citations and the most cited authors

Position	Authors	Total citations	Cluster
1st	(Cornwell, Weeks <i>et al.</i> , 2005)	11	Cluster 1 – Sponsors, brands and consumers of sport events.
2nd	(K. P. Gwinner & Eaton, 1999)	10	
3rd	(Speed & Thompson, 2000)	9	
4th	(K. Gwinner & Swanson, 2003)	8	
5th	(Meenaghan, 2001)	8	
1st	(Muniz & O'Guinn, 2001)	13	Cluster 2 – Loyalty to the team and the sponsoring brand.
2nd	(Funk & James, 2006)	10	
3rd	(Funk & James, 2001)	9	
4th	(Mahony, Madrigal, & Howard, 2000)	8	
5th	(Schau, Muñoz Jr, & Arnould, 2009)	7	
1st	(Keller, 1993)	16	Cluster 3 – The team's internationalization and its brand economic value.
2nd	(Bauer, Stokburger-Sauer, & Exler, 2008)	11	
3rd	(Gladden & Funk, 2002)	10	
4th	(Bauer <i>et al.</i> , 2005)	8	
5th	(Gladden, Milne & Sutton, 1998)	8	

Figure 3 and Table 1 give a perfect summary of the true “gurus” of the subject under study; hence it becomes academically relevant to know more thoroughly the studies they implemented and that belong to the Top 5 most cited articles by each cluster. These articles belong to a set of 35 that compose all the three clusters obtained, using VOSviewer.

The three clusters found allowed to identify the literature's main trends on the theme of Football Internationalization. In the following tables we will specify, the objectives, methodologies and conclusions reached by each one.

Throughout the three clusters, we verify that the authors approach different perspectives of the different concepts. However, they all end up intersecting at some point. The consumer is undoubtedly an element present in all clusters; it is from him that a whole marketing strategy will be developed. Knowledge of their attitudes, through interactions, will allow the brand positioning and, thus, maximize the sponsorships. In a sporting context, the consumers' identification with a team or sport influences a sponsorship's impact; those most identified are more likely to present positive results related to sponsorship. Nevertheless, management should focus on the attributes not produced (history, tradition, logo, colours, fans and stadium). Consumer segmentation at identification levels allows greater gains in the sponsorship effectiveness. Loyalty to a team or sport is a process that evolves progressively, and it is not always upward. For consumers, it results from the causality between the brand's attributes, benefits and attitudes. Awareness is a fundamental element for loyalty, and it can be measured by the consumers' behaviour. All the articles in the three clusters are intended to provide data to guide brand or team managers to make decisions about sponsorship or to develop strategies

Table 2– Cluster 1 – Sponsors, brands and consumers of sport events.

Authors	Objective	Methodology	Conclusions
Cornwell, Weeks, et al., 2005	To deepen the theoretical explanations on the operation of the sponsorship and to understand the way in which the consumers process the marketing related to the sponsorship.	Literature review	Sponsorship is influenced by several factors, not only at the individual or group level, such as market and management factors.
K. P. Gwinner & Eaton, 1999	Evaluate the degree to which the image of a sporting event is transferred to a sponsoring brand of the same	Quantitative	Image transfer results have implications for both brand managers and event managers.
Speed & Thompson, 2000	Examine the relationship between the attitudes of consumers of a sporting event and the sponsor.	Quantitative	It requires interaction with consumers to identify opportunities and thereby maximize the value of sponsorship in an event.
K. Gwinner & Swanson, 2003	Study the impact of fan identification on four distinct outcomes: recognition, attitude, sponsorship, and sponsor satisfaction.	Quantitative	Sponsors can gain greater sponsorship gains by targeting the sports spectators by levels of identification with the team.
Meenaghan, 2001	Understand the effects of patronage on consumers through the integration of key principles.	Literature review	It is necessary to create a more comprehensive model on the functioning of sponsorship and its effects

Table 3– Cluster 2 –Loyalty to the team and the sponsoring brand

Authors	Objective	Methodology	Conclusions
Muniz & O'Guinn, 2001	Investigate the characteristics, processes and particularities of brand communities.	Qualitative	These communities are a space for conducting business and simultaneously a collective place of consumption.
Funk & James, 2006	Examine the evolutionary process of loyalty to a particular sports team.	Quantitative	Faithfulness results from an individual process of emotional development, functional knowledge and symbolic value of the benefits associated with the team.
Funk & James, 2001	Explain, through the model "The Psychological Continuum Model", the process of psychological connection of an individual, from the initial awareness of a sport or team to eventual loyalty.	Literature review	Some individuals may never progress from consciousness to loyalty, others may even return to the initial state of consciousness.
Mahony et al., 2000	Develop a psychological commitment scale for a team to target consumers based on loyalty.	Quantitative	Consumer targeting is the foundation for developing any personalized marketing program and thus optimizing the potential of your commitment.
Schau et al., 2009	Study the process of value creation in brand communities based on common practices in the literature.	Literature review	Common practices lead to stronger brand communities and consequently create brand value.

Table 4– Cluster 3 – The team's internationalization and its brand economic value

Authors	Objective	Methodology	Conclusions
Keller, 1993	Understand how managers can create brand equity.	Literature review	Marketing allows to maintain the awareness and image of the brand which increases the knowledge in the consumers about it and potentiates the creation of brand value.
Bauer et al., 2008	Demonstrate the importance of a club's brand image and its influence on the loyalty of fans to the sport or team.	Quantitative	The brand image of a club results from the causality between brand attributes, benefits and attitudes.
Gladden & Funk, 2002	Identify the branding dimension of a brand through the Team Membership Template.	Quantitative	There are several types of brand association in team sports and additional variations for the Team Membership Model.
Bauer et al., 2005	Improve existing brand equity models for the collective sports industry and examine their importance in the German professional football league (Bundesliga).	Quantitative	Customer-based brand equity should be used carefully in product categories with high consumer awareness. The value of the brand has a positive effect on the economic success of a club.
Gladden et al., 1998	Develop a theoretical framework of brand value from the understanding of the antecedents and consequences of the heritage of the brand.	Literature review	Brand value creation is a cyclical process that includes antecedents and consequent brand value that can be manipulated.

Regarding the limitations, because it is a research method that is confined to a database, it soon presents restrictions, but it should be noted that the ISI Web of Knowledge database is one of the most recognized in the academic field. Another limiting factor is the identification of the terms to be searched that can condition the work. The terms "Football Brand" and "Internationalization" used for the research, which resulted in a database of 103 articles, may not necessarily be the most relevant terms for the subject studied.

As proposals for future research we suggest further reviews of the literature related to the internationalization of sport in general and football in particular, using other search terms and other databases such as Scopus that can give us other results and, therefore, another type of discoveries about what is ely increase the theoretical and empirical knowledge in this subject.

5 Conclusions

A bibliometric analysis was implemented, which resulted in a database of 103 research studies obtained from the ISI Web of Knowledge. The first work was published in 2006 and the latter in 2017. Based on the results found, we determined that most of the studies performed are literature reviews and quantitative studies. We have identified that the most cited publications, mainly by other scientific areas, derive from magazines in the Management and Marketing areas. We have noted that the United States of America has been intensively focused on the Football Internationalization, while in Europe, England followed by Germany are beginning to show their interest.

Another fundamental contribution is related to the fact that this research allowed us to perceive which theme, divided into clusters, arouse the research interest the most by the most diverse authors. This division allows to draw the panorama, in terms of scientific publications, of the most used topics, for a more detailed investigation. Sponsorship, brand, consumer, loyalty and brand value are the topics most addressed. Whether through literature reviews or through quantitative studies, the analysis unit of the vast majority of researches are sports organizations and their consumers. The research performed allows us to verify that the consumer has an active and prominent role in the construction of a brand, which is why he is increasingly the focus of the organizations.

There is a growing interest in this research area, especially in the last four years, as a result of the need to explore new markets, such as internationalization in sport. This sports internationalization process is a recent phenomenon that has registered a rapid growth, driven by the sport's globalization and professionalization. The systematic review of literature shows that the football internationalization is an opportunity for organizations and their brand is a fundamental aspect in this process.

Any researcher who reads this article can easily find himself in relation to the main authors, thematic, countries of origin and temporality of the studies, thus obtaining his own starting point for other investigations in order to give greater consistency and substantively increase the theoretical and empirical knowledge in this subject.

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PARALLEL SESSION 13

INTERNATIONALIZATION STRATEGIES FOR SMALL AND MEDIUM-SIZED ENTERPRISES

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Extended Abstract

Abstract

Internationalization strategies have been an issue that has not reached a consensus in the scientific community, so that in the last decades an exponential increase in scientific production has arisen in this area. This Systematic Review of Literature (SRL) addresses the strategies of Internationalization of Small and Medium-sized Enterprises (SMEs) and the way in which they approach the international market. For this purpose, the ISI Web of Science database and Scopus were used for collection of 167 articles from relevant journals, dated from 1980 to 2019. Regarding, to the results obtained, it was possible to identify five themes to circumscribe the research by different areas of Internationalization and making a conceptual design of the research. This study also provides valuable contributions to the development of research suggestions and guidelines for future work in this area.

Keywords: Strategy; Internationalization; Entrepreneurial Orientation; SME; Review Systematic Literature;

1 Introduction

Internationalization is an increasingly current theme, which has aroused great interest in the scientific community over the last decades and is currently studied with more relevance and has generated an exponential increase in publications. The role of small and medium-sized enterprises (SMEs) is becoming ever more important in the global context, since they are mostly the business fabric. Internationalization is therefore vital for the growth and survival of SMEs, Goel & Yang (2015b), otherwise they are more vulnerable to globalization, to the speed of technological change and to the scarcity of resources with which they face (Valentim, et al., 2016)

This research is not limited to analysing the benefits of internationalization, but the costs that SMEs have to support are also considered, which derive from the intrinsic differences between SMEs and multinational companies, particularly the costs arising from the constraints on financial and management resources, which SMEs face (Jarillo, 1989, Oviatt & McDougall, 1994).

Internationalization is an act that implies high levels of risk (Miller, 1983), as SMEs face internal scarcity of information, capital, management time and experience, while externally, SMEs also face restrictions resulting from their vulnerability to environmental changes (Buckley, 1989).

Such intrinsic deficiencies, of resources and capacities, impose restrictions on the internationalisation of SMEs (Zacharakis, 1997) and these restrictions increase the responsibilities of their implementation in international markets (Hymer, 1976), novelty (Stinchcombe, 1965) and make internationalization a highly frightening challenge for SMEs.

Some SMEs, in a process of re-internationalization, will go into the process of entry with a significant international heritage of previous activities, including, mainly, relevant knowledge and networks, thus allowing faster re-entry and take-off in the process. There may still be several episodes of re-internationalization, which eventually emerge as the path of this long process of internationalization (Jones & Coviello, 2005).

Little is known about this process in the first approach to the markets, two situations can happen: either they retract or "de-internationalize" (Benito & Welch, 1997), few studies have investigated these findings (Bloodgood et al., 1996), and all are based on small samples (Gabrielsson et al., 2008).

The main objective of this study is to analyse, synthesize, and present a Systematic Review of Literature (SLR) of the internationalization strategies of SMEs. In this literature review, which is predominantly descriptive and inductive in nature, the authors intend to identify the major challenges for the internationalization of SMEs, applied to internationalization strategies, international entrepreneurship, entrepreneurship orientation entry modes and re-internationalization process.

Thus, the research questions for this study are:

- i) Which strategies choose SMEs for internationalization?
- ii) Is entrepreneurial orientation conducive to the re-internationalization of SMEs?
- iii) What are the main reasons for the de-internationalization of SMEs?

This research intends to contribute to the literature in two ways: firstly, to develop a conceptual model of the impact of the internationalization of SMEs and, secondly, to demonstrate empirical evidence of the path that can be followed by SMEs in their internationalization strategy and re-internationalization. The article is organised as follows. Section 2 outlines the most relevant literature. Section 3 describes the applied research methodology, which follows a five-step SLR approach. Section 4 discusses the results obtained, presenting research suggestions, as well as avenues for future research and lastly, the final section is the study conclusions.

2 Literature Review

The researchers have used several theories to explain the internationalization strategies of companies (Hosseini & Dadfar, 2012), being recognized as an area of importance for SME (Malhotra & Hinings, 2010), thus providing these companies with opportunities to grow and profit in foreign markets (Musteen et al., 2014).

Internationalization strategies are also vital for the growth and development of companies operating only in the internal market, and it is therefore considered a process of opportunities and exploitation which leads to involvement in international operations (Welch & Luostarinen 1988).

This expansion helps to increase competitiveness, facilitates access to new product ideas, innovation and technology, as well as the ability to engage in export activities, so it is supposed to be fundamental, to ensure the survival and the growth of SME (Westhead et al., 2001).

However, the accumulation of knowledge, organizational capacities, financial resources, equipment, and other physical resources are the main obstacles that SMEs do not have and that are in deficit, compared to large companies (Zucchella et al., 2007).

The strategy of internationalization initially started in countries that are culturally similar or of geographic proximity, was a cornerstone in the Uppsala model of Johanson & Widarsheim-Paul (1975), which was later improved by Johanson & Vahlne (1977), because they are close in terms of psychic distance. In the specific model, built in the 70's, some obstacles arose, namely a rudimentary understanding of the market. These obstacles were also explained essentially due to the difficulties of internationalisation by companies, so that they had had the need, years later, to review them and adapt them to the new reality and the demands of the economy in constant change, so it was named the Uppsala model from the Networks perspective (Johanson & Vahlne, 2009).

The strategy of global and early internationalization arises when the theories that seek to analyse and explain the "how" and the "why" of some companies approach the market from a very early age, many of these companies have internationalized before the end of the first year of activity, which are known as Start-ups and as Born Globals (Andersson, 2011). Researchers tried to explain and perceive the phenomenon of this new reality, of which we can highlight McDougall, Shane & Oviatt, (1994), Zahra & George, (2002) and, with the emergence of these companies, the traditional theories of internationalization were also put into question (Sapienza et al., 2006; Rialp et al., 2010).

Some SMEs equate international expansion, circumventing obstacles, forming a strategic partnership with another company, already present in a foreign market and which is seen as an attractive alternative, rather than entering alone (Kennedy & Keeney, 2009) thus constituting a strategic alliance.

For many SMEs, strategic partnership activities are the only way they can remain competitive and even survive, nowadays, in a technologically increasingly advanced world and always in constant change, where strategic partnership is seen as an ingredient in the international company's strategy, thus achieving the possibility for companies to making fewer mistakes in foreign markets unknown (Lu & Beamish, 2001). These strategic partnership activities can also help minimize barriers to internationalization (Fillis, 2004).

Partnerships can be used by SMEs to develop technological skills and competencies in order to overcome weaknesses, in financial situations for example, such as: low levels of experience in production, marketing and management, which may also mean that companies can venture into larger projects with fewer financial burdens, since the search for new external markets can be an insurmountable risk for an SME to support alone (Elmuti & Kathawala, 2001)

However, Goel & Yang, (2015a) argue that SMEs do not make many alliances, preferring to be entrepreneurs of SMEs to supervise all business activity. According to Franco & Haase (2015), the business environment is characterized by greater complexity, competition and globalization.

The entrepreneurial orientation influences not only the way a company is organized for the discovery and exploitation of opportunities, but also how the PME acquires and organizes the implementation of resources for its growth, which can create a unique organizational capacity. The findings in the study by Brouthers et al., (2015) revealed that entrepreneurs with entrepreneurial orientation, relational capital, and human capital directly influence the international performance of SMEs. They also succeeded in demonstrating that entrepreneurial orientation and relational capital also play an important role as mediators in strengthening human capital performance. Entrepreneurial guidance actively seeks and explores international opportunities and relationships to acquire knowledge about potential customers and partners, to improve its human capital and streamline its resources for improving the delivery of its products in new markets.

However, in the opposite sense, the international entrepreneurial orientation backs out when there is international hostility and personal pressures to the detriment of good management practices of SMEs (Thanos et al., 2017). Re-Internationalization then emerges, when SMEs leave their operations for a certain period, until they again opt for an international re-entry process with renewed international operations (Welch & Welch, 2009).

SMEs can also re-enter the market by assuming new network relationships (Hadjikhani, 1996; Welch & Welch, 2009), where they choose different resources and capacities (Javalgi et al., 2011), other entry costs (Roberts & Tybout, 1997) and divergence from previously established strategies (Jones & Khanna, 2006) in decisions to enter international markets.

Some authors also identify other factors that influence and lead to the re-internationalization of SMEs, such as: ownership change (Welch & Welch, 2009), acquiring additional experience (Benito & Welch, 1994), reduction of trade barriers (Javalgi et al., 2011) and the improvement of market conditions (Akhter & Choudry, 1993; Crick, 2004; Swoboda et al., 2011).

Vissak (2010) stated that "re-internationalization can be followed by several re-internationalizations", and Axinn & Matthyssens (2002) concluded that SMEs use combinations of entry and exit strategies, and Javalgi et al. (2011) have agreed that a company may also experience multiple exits and re-entry.

According to Ellis & Pecotich (2001), many SMEs rely on sporadic export orders, because exporting in an unsystematic way becomes more flexible and is common among SMEs (Kalinic & Forza, 2012). The longer this space of time, the greater the likelihood of increasing re-entry (Welch & Welch, 2009).

Conversely, some authors approach de-internationalization as an inverse process, when compared to internationalization (Drogendijk, 2001; Turcan, 2003). The de-internationalization of SMEs covers the total withdrawal of foreign markets (Welch & Welch, 2009), the exit or reduction of operations in one or more countries and the change of SME entry modes (Benito & Welch 1997; Calof & Beamish 1995; Johanson & Vahlne 2009).

There are some contributions that focus exclusively on the topic of de-internationalization (Benito & Welch, 1997; Mellahi, 2003; Turcan, 2003), others on foreign disinvestments (Benito 1997; Boddewyn, 1979; Cheng & Yu, 2008; Sachdev, 1976; Tornedon & Boddewyn, 1974) and finally contributions on the withdrawal of exports (Bonaccorsi, 1992; Pauwels & Matthyssens, 1999; Welch & Wiedersheim-Paul, 1980).

Voluntary de-internationalization of SMEs can be caused by changes in the external environment (Swoboda et al., 2011), decrease in local demand (Welch & Wiedersheim-Paul, 1980), competition (Javalgi et al., 2011), resource costs (Boddewyn, 1979), change in rates (Crick, 2004; Welch & Wiedersheim-Paul, 1980), and thus lose price competitiveness (Welch & Welch, 2009), but also on changes and international commitment (Benito & Welch, 1994) as well as on long-term goals (Akhter & Choudry, 1993). The de-internationalization of SMEs is not always a failure, it can be a strategic choice (Benito, 2005). Yet, many SMEs come out of the international scenario so negatively, that there is a strong lack of interest in any attempt to resume its international involvement (Crick, 2004).

3 Research Methodologies

The extensive thematic makes it unconventional to use a review of the traditional literature, which is based essentially on descriptive and narrative reviews. Firstly, this study uses a SLR methodology (Tranfield et al., 2003) that allows an objective review of existing literature on a given topic. The use of an SLR approach allows the creation of a framework for an analysis of the literature in a deeper way, adopting a transparent scientific process, which can be replicated by other researchers (Tranfield et al., 2003). The benefit of this methodology lies in the possibility of synthesizing research, while minimizing bias. As proposed by Denyer & Tranfield, (2009) and applied by Costa et al., (2016), in the internationalization field, the SLR applied in this study consists of five phases. In a first phase, the SLR is guided by the formulation of research questions that end up guiding the research and defining studies that may be part of the analysis.

The second phase is the collection of studies and the third phase will be the selection and evaluation of the articles that will be part of the final database. At a later stage, we proceed to the analysis and synthesis of studies in order to categorize their results and contributions. Finally, the results will be reported and discussed in order to present gaps and a future research agenda. Regarding the research questions defined for the study, in the introductory section, they end up being the starting point for the SLR, which guide the entire process of data collection and analysis. The databases used for this collection were Web of Science and Scopus (phase 2).

The selection of these databases is justified by the predominance of peer-reviewed journals of high relevance for the theme of internationalization, assuring the rigor and academic quality, of the papers that will be part of the sample (Jones et al., 2011) which allows us to have confidence in the results presented. The data were obtained during the month of March 2019 and the collection was done based on the keywords, "smes internationalization", "internationalization entrepreneurship", "strategy-*", "entrepreneurial orientation", "Re-international-*".

Then, the abstracts were read in order to ensure that they are relevant to the study, which led to the exclusion of two articles that we consider not to fit the study objective. Finally, a closer examination of the articles was carried out and no other documents were excluded. The final sample is composed of 167 articles.

After the selection phase, the articles that are part of the study were carefully analyzed and the most relevant information about them was stored in order to identify the study objectives as well as the methodology applied and the main findings and contributions, a process that allowed to highlight the key aspects of each article. The method used allowed to cross the information obtained with the remaining articles, as well as to systematize and to categorize them thematically.

The final phase of the RSL formally presents the results obtained and the findings are discussed within the theme where the study is included, identifying existing gaps and proposing a future research agenda.

4 Discussion and Results

This research shows the main topics related with Orientation Entrepreneurship, International Entrepreneurship, Internationalization strategies, Re-internationalization and De-Internationalization considered in literature addressing internationalization of SMEs. The findings were grouped together to better understand the fundamentals of each process under analysis.

The results of this SLR regarding our first research question indicate that internationalization strategies can be carried out through an incremental strategy, using the Uppsala model (Johanson & Vahlne 1977, 1990, 2003), which aims to explain and to predict different patterns of behaviour in the internationalization process, and to explain the characteristics of internationalization in the company's process (Axinn & Matthyssens, 2002). However, the last few decades have also been characterized by a significant growth in the number of companies that begin internationalization from the first day (Zucchella et al., 2007), through a global internationalization strategy.

In response to the research question on entrepreneurial orientation, whether to favour re-internationalization, according to Malhotra & Hinings (2010), re-internationalization occurs when the pace of resource commitment continually expands or shrinks depending on the scale and flow of SME projects. Hadjikhani (1996) claims that re-internationalization is more likely for companies that were previously highly committed to the international markets where they operate, because they benefit from the knowledge, contacts and experiences previously established (Javalgi et al., 2011; Welch & Welch, 2009). In the opposite direction, there are other entrepreneurial guidance that choose to take an approach in other international markets (Crick, 2004; Javalgi et al., 2011; Vissak, 2010). This option results essentially from the negative circumstances of the exit of the markets where they initially acted (Welch & Welch, 2009), as well as the lack of knowledge about the current state of these markets, lack of confidence and fear of prejudice due to previously developed activities (Javalgi et al., 2011).

In order to answer the last research question, some authors suggest that de-internationalization is only an inverse process when compared to internationalization (Drogendijk, 2001; Turcan, 2003), but often divestitures are decisions of last resort and are only put into practice in the event that all other decisions have led to unsatisfactory results.

The de-internationalization of SMEs is related to the poor performance which is often referred to as the most decisive determinant of SMEs' divestments and withdrawals of exports (Lindgren & Spångberg 1981, Pauwels & Matthyssens 1999, Tornedon & Boddewyn 1974) and the increase in costs, which is likely to result in the dissolution of all SME activities in the international market.

5 Conclusions

This SLR has some natural limitations, and area researchers should be aware of these limitations when interpreting the material presented here. The SLR was based on journal articles from two databases: Web of Science and Scopus. While covering a wide range of articles and journals in different areas, some other databases (eg EBSCO) may also present valuable research articles that could have been lost in this review. This review focuses only on SMEs, but some findings from studies focusing on multinational companies may also be relevant in the context of SMEs. This SLR may not be very extended but it provides new insights that complement the knowledge generated by previous studies and may help stimulate further relevant research.

Based on empirical results from previous studies, the objective of this review was to analyse, synthesize and present a thorough SLR on the strategies of SMEs in the internationalization processes. The SLR methodology proved to be a useful tool to avoid descriptive reviews of the literature, with contributions that include the synthesis of the main findings of the literature, the identification of gaps and the establishment of a basis for future research.

The results of this study can be expected to help academics and professionals to develop new tools and methodologies based on the state-of-the-art technologies. Besides that, the development of models and approaches to entrepreneurial orientation in re-internationalization seems to be an important requirement for SMEs on the most appropriate international strategies. However, some SMEs may opt for de-internationalization.

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PARALLEL SESSION 13

THE INFLUENCE OF ORGANIZATIONAL AMBIDEXTERITY ON THE SPEED OF INTERNATIONALIZATION: EMPIRICAL EVIDENCE FROM PORTUGUESE SMEs

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Extended Abstract

Abstract

In the last decades, the speed of internationalization has gained a central position in the research on the internationalization of Small and Medium Enterprises (SMEs). Knowing that companies need a certain combination of organizational skills to grow rapidly in international markets, understanding whether there is an ideal combination to compete today (exploitation) as they prepare to compete in the future (exploration), is particularly important. We propose, therefore, to contribute to a better understanding of the factors that influence the speed of internationalization of SMEs.

Keywords: Speed of internationalization; organizational ambidexterity; exploration; exploitation; small and medium-sized firms

1 Introduction

The topic of speed of internationalization reveals a central position in the research on the internationalization of companies [1], [2], once in addition to considered the most relevant time-based dimension in internationalization process [3] can be a good strategic alternative enhances firm performance [4]. When a company operates in an international market, that is, in a more competitive environment, top management faces the following question: how to allocate resources to exploration and / or exploitation? While some companies tend to take advantage of the identified opportunities (exploration), others tend to exploit existing products and/or services (exploitation). Although prior research has highlighted the importance the both organizational orientations [5], as well as ambidextrous orientation [6], [7] as important determinants the strategy of internationalization the firms, the identification the orientation that most contributes to the increase of the speed of internationalization of companies is still non-existent.

Thus, the aim of this study is understanding which the firms grow faster: those that are purely exploitative, purely explorative or those that perform ambidextrous activities? We further propose, analyses if is there an optimal combination of exploration and exploitation (ambidexterity) activities to growing rapidly in international markets.

A company with a high ability organizational ambidexterity, it's expected that being faster and more successful in the internationalization process (exploiting what the company already has and exploring new opportunities in the international market). We will use a survey of a sample of SMEs from North of Portugal. sions are presented, closing the article with the limitations and suggestions for future research.

2 Literature Review and Hypothesis Formulation

2.1 Speed of Internationalization: concept and measures

The speed of internationalization shows a lack of conceptual clarity and of measures [8]. Although the term "speed" is used most often [9], the literature in the area also considers the term "pace" [10], "rapid" [11], "accelerated" [12], "age at entry" [13], "rhythm" [14] and others concepts.

It became quite common to differentiate between the initial input speed (earliness) and the post-entry speed (post-internationalization speed). Normally, the earliness consider the difference between the year of the firm inception and the year of the first export [15]–[18] and the post-entry speed is measured by as the annual change in new markets (speed of new foreign market entries), scale (level of export sale) and scope (geographic diversification) [12], [19]. However, the literature indicates that "speed of international expansion" captures how fast a firm spreads its sales activities to various country markets [2], [8], [20].

Most of the empirical studies use one-dimensional measures to measure the speed of internationalization. However, there are authors who have combined some of the above measures [12], [19]. In fact, both conceptual studies [2], and empirical studies [12] have suggested that the speed of internationalization is a complex and multi-dimensional concept, once that one-dimensional measure limits the analysis of the speed of internationalization and the characterization of the internationalization process of companies [2], [9], revealing a theoretical gap to be explored [21].

2.2 Explorative, Exploitative and Ambidextrous Orientation: impact on the speed of internationalization

The organizational environment is constantly changing, which requires companies a constant adaptation. The adaptation the companies considers two orientations: exploration and exploitation [22]–[24]. Exploration refers to the discovery of new opportunities outside the organization [25], and leads to the development of new products and/or the search for new markets [25], [26]. This type of activities is associated with a rapid adaptation [23]; experimentation, flexibility and innovation [26] and the acceptance of uncertainty [27]. On the other hand, exploitation is mainly based on the application of existing knowledge [10] by adapting technologies and focusing on the current customers [25], [26]. It's considered as development of new knowledge pertaining to existing markets, products, technology and capabilities [21]. There are also characterized by activities that they consider a gradual adaptation [23]; control, certainty and risk reduction [26] promoting more intense, rapid and correct feedback [28].

Exploration allows the proactive pursuit of information acquisition and processing [29] through which the organization can widen its horizons and detect new alternatives [5]. It should be noted that the characteristics of the learning process in exploring companies allow managers are more attentive to the opportunities that may arise in the foreign market [5]. This type of orientation is for companies that choose to "run" in the international markets [27]. Yet, the improvement of competences, technologies, paradigms and extensions resulting from exploitation activities [30], will allow companies to improve their adaptability in international markets at lower costs [31]. Like this, with more efficient international practices it's possible boosting the sales and promotions in the international market [21]. To know which of the orientations most contributes to the speed of internationalization of SMEs, we therefore hypothesize the following:

H1: The speed of internationalization is higher, in the SMEs that follow a purely explorative (exploitative) orientation than a purely exploitative (explorative) orientation.

The long-term success in an international environment requires companies to exploit their existing capabilities while simultaneously explore new skills [6], [32], [33], arguing that in a dynamic environment, an enterprise must be adept at rapidly discovering and exploiting opportunities [34]. The ambidexterity considers exploitation and exploration activities [32], that presenting as two distinct but complementary perspectives [35]. This implies the need for the companies to be adjusted for achieve an equilibrium between the two activities [5], [6]. Although it's consensual among scholars that an ambidextrous orientation is difficult to achieve [30], it's expected the more ambitious the organization, the more capacity it will have to exploiting the current resources and exploring new international markets successfully, promoting a firm's performance [6] and helping to accelerate the internationalization process. So, the international ambidexterity is the foundation of a sustainable international firm [26], where the mutual influence between opportunity discovery and opportunity exploitation, demonstrate that they are entwined [36]. We, therefore, hypothesize the following:

H2: The speed of internationalization is higher in the SMEs that follow an ambidextrous orientation.

Following the previous hypothesis, the process of internationalization is a context of ambidexterity, where the interaction between exploration and exploitation has a positive influence on speed of internationalization [21]. But does such a situation imply a trade-off effect between exploration and exploitation? [5]. This question is especially important for SMEs because have fewer resources and hierarchical systems that allowing to manage the trade-offs between exploration and exploitation [25]. We, therefore, hypothesize the following:

H3: The combination the exploration and exploitation activities (ambidexterity) imply a trade-off between both, ie, more exploration (exploitation) activities lead to less exploitation (exploration) activities.

3 Methodology

3.1 Data and sample

The research analysis unit are the international SMEs from North of established since 2005 with international activities. Select of companies, was started from the database from the SABI (Iberian Balance Analysis System) database that contains credible and current quantitative information from Portuguese companies. As an exploratory study, we focus on traditional manufacturing sectors (footwear; textile; clothing and furniture) because they are heavily internationalized sectors. In addition to the quantitative data available in a secondary source statistical data-base, we sent a questionnaire to the selected SME management team.

3.2 Measures

Target Variable: rate of growth of the speed of internationalization. According to several contributions from the literature [12], [20] the speed of internationalization is a multidimensional metric. Thus, we measure the degree of internationalization (change every year in) of companies as follows: annual change in the number of international market (scope) and annual change in FSTS (foreign sales to total sales) (scale). The growth rate is calculated by annual variation the degree of internationalization of companies $(DOI_t - DOI_{t-1}) / DOI_{t-1}$, divided by the number of years in analysis.

Antecedents: To measure the International Organizational Ambidexterity (IOA) we adopted the Lubatkin et al (2006) [25] scale, where respondents are invited to evaluate the company's OA for the past 3 years. It considers 6 items for 'explorative' orientation and 6 for 'exploitative' orientation through a 5-point Likert scale ranging from 1 (disagree at all) to 5 (fully agree). This scale is explicitly referred to the orientation of companies in the combination of company's markets (domestic and international).

Control Variables. The present study controls the following factors: manager's and organization's age; international experience, firm's institutional support and firm's net-working, manager's qualifications and professional experience.

The analysis of the impact of IOA is measured with three different levels (purely explorative; purely exploitative and ambidexterity), comparing the rate of growth of the speed of internationalization between companies.

4 Analysis of Results

Based on the literature review, we constructed a model (cf. Fig 1) to test whether the Organizational Ambidexterity affect the speed of internationalization of SMEs.

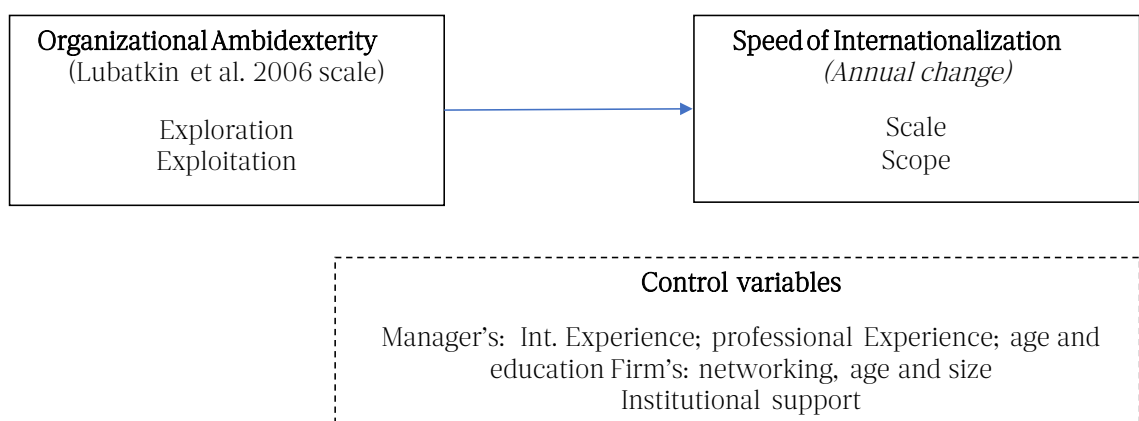


Fig.1 Research model of the study

Depending on the acceptance of the hypotheses, the growth rate of the internationalization speed of SMEs can be enhanced by a purely explorative, exploitative or ambidextrous orientation. However, if the companies want to reconcile both orientations (ambidexterity), there seems to be a trade-off between different activities, let's see: if on the one hand, the entrepreneurs need more time to develop exploration behaviors in new markets and new activities, it is likely that this behavior will lead to a possible reduction of international sales (scale), as it exists an effective reduction the available time for exploitation activities on the existing markets. However, are expected to have an opposite effect on the number of international markets operated (scope), due to investment in diversity of international markets to the detriment of the exploitation of existing markets. The opposite approach is also valid, ie more sales on the existing markets (scale) implies less exploration the new international markets. The above indicates the possibility of identifying an optimal combination of resources and activities that boost the speed of internationalization.

5 Conclusion

This article sought to contribute to a better understanding of the determinants of the speed of internationalization analyzing what the organizational orientation (purely explorative and purely exploitative and ambidextrous), that most contributes to the increase of the speed of internationalization post-entry. This study is limited in scope because only test this among a sample of manufacturing firms from a traditional industries and among SMEs located in a country/region unique. The theoretical implications indicate that a portion of the explanation of the emergence of accelerated patterns of internationalization are rooted in firm's organizational dimensions (purely exploitative, explorative or ambidextrous). Practical implications relate to the idea of emergent and deliberate strategies. While some firms may go international to seize opportunities in an unplanned manner, they do must devote time and resources to plan activities required for competing internationally. Furthermore, they must learn to cope with the trade-off between allocating resources to exploit extant resources and capabilities and to explore new opportunities outside the firm and domestic markets.

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PARALLEL SESSION 14

CORPORATE SOCIAL RESPONSIBILITY DISCLOSURE THROUGH RETAIL BRAND LABELS AND CONSUMERS' PERCEPTION OF SUSTAINABLE POSITIONING

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Extended Abstract

Abstract

Retailer brands were initially introduced as low quality brands and low prices. Currently, customers understand that these brands are valuable and have a preference for them. In this sense, increased competition and the proliferation of own brands that distribution companies have to face motivated retailers to increasingly introduce sustainable development in their practices as a competition issue with corporate brands. This paper intends to fill in gaps in the field of social responsibility communication through the packaging of retailers' products, as the symbols and information that are presented on labels. Following a quantitative analysis of 539 consumer surveys, the authors concluded that the CSR information packaging does not reflect the positioning of retail brands in consumers' minds.

Keywords: CSR disclosure, Retail Brand Positioning, Sustainable Packaging, Label Information

1 Literature Review

Retail brands were initially introduced in the market as basic versions of products with low quality and low prices (Ailawadi & Keller, 2004). The increased competition and the proliferation of retail chains have forced retailers to develop brand equity for their own labels. Customers understand currently that these brands are valuable for the relation between price and quality and have a greater preference for them (Jara & Cliquet, 2011). Some retailers have gained exclusive value associated with certain attributes and levels of quality (Beristain & Zorrilla, 2011; Cuneo, Lopez, & Yague, 2012) and the capital of the brand characterized by the consumers' subjective assessment of distribution value added (Semeijn, 2004). These attributes grant the creation of consumer preferences and form a positive brand image (Jara & Cliquet, 2011). The sophisticated packaging, the qualitative innovation and the wide variety of products of retail brands create value for consumers (Ailawadi & Keller, 2004). A study concluded that customer loyalty is higher to retail brands than private brands (Azad, Zarifi, & Hozouri, 2013).

Corporate social responsibility (CSR) shifted from ideology that companies have a role in society, and should apply social and ethical standards in their businesses (Lindgreen & Swaen, 2010). In this sense, it is important to foster the adoption of social responsibility in companies to ensure the sustainability of resources to medium and long term, since the activity of a company impacts in the economic, social and environmental level. The triple bottom line approach for sustainability consider these three areas of intervention, although companies disclosure imbalanced interventions of this approach (Sanchez-Hernandez, Jr., & Dias, 2019)

Private labels are increasingly developing a sustainable positioning with corporate social responsible activities (Lindgreen & Swaen, 2010), due to the value consumers assume about corporate sustainability (Pradhan, 2018). In the same way, also retailers started developing such practices as a competition issue towards corporate brands (Pop, Vaduva, Dabija, & Fotea, 2010). It is increasingly being pointed out that retailers are more concerned, not only by selling their own products, but also by pleasing the consumer through the image of the retailer brand (Carrero & Valor, 2012). If retailers create social responsibility plans for the whole company, they provide to consumers an ethical offer, including own labels with social attributes leading consumers to buy responsibly with positive consequences for the world and society at large (Pop et al., 2010). These trends also help other companies to be concerned with CSR, forcing them to adopt responsibility for belonging to the group of sustainable products (Galarraga, 2002). In recent years retailers have been implementing several practices, taking into account sustainable development, such as plastic bags elimination, reducing CO2 emissions, fighting child labour, improvement of employment practices (as parity of male and female), hiring workers with disabilities, among other actions (Lavorata, 2014).

The consumer perception and value about CSR varies according to the consumer profile, based on environmental knowledge, healthy way of life and healthy food consumed (Suki, 2014). This means that the consumer environmental information and sensitiveness leads to different consumers' perceptions about the value of sustainable products (Tansakul, Suanmali, & Shirahada, 2018).

The impact of CSR in firm's performance is usually connected also with the communication provided by the company about sustainable activities (López-Fernández & Mansilla, 2015), which should be part of the marketing strategy of the company to influence consumer perception of corporate image (Pop et al., 2010). In order to prevent an hypocrisy perception about CSR, the communication of sustainability positioning should be coherent with corporate actions (Santos & Casais, 2019). In fact, there are cases of companies with greater sustainability performance than its CSR disclosure and for that reason the impact on firm's performance is lower (Li, Boudreau, Huber, & Watson, 2013).

For many years packaging was an essential element in the development of markets (Silayoi & Speece, 2007). As soon as a given product is placed in the linear with an attractive image, more customers are expected to be reached. Customers often buy products influenced by packaging and not supported by the product characteristics (Azad & Masoumi, 2012). Indeed, the packaging is a fundamental element of the modern way of life (Ahmed, Ahmed, & Salman, 2005). To be effective, the packaging shall contain on the label all the information essential and required by the customers where the product is presented: producers' concern for the use of the products (Wells, Farley, & Armstrong, 2007), the characteristics of the product and instruction for its use of the product, besides communication through labels (Azad & Masoumi, 2012). Finding a packaging solution is an effective way and a key factor for the success of any marketing strategy. Package of foods, for instance, has to be convenient and functional (Ahmed et al., 2005).

The label is considered the best tool to offer consumers information about a brand's social and environmental attributes (Howard & Allen, 2006; Kong, Salzmann, Steger, & Somers, 2002; Pelsmacker, Janssens, Sterckx, & Mielants, 2005; Uusitalo & Oksanen, 2004). These labels are designed to help motivated consumers to take an informed decision (Carrero & Valor, 2012).

Several studies have shown that consumers value products that have CSR labels (D'Souza, Taghian, Lamb, & Peritatko, 2007; Dickson, 2001; McEachern & Warnaby, 2008; Pelsmacker et al., 2005), although there are differences about the issue covered by the label and the profile of the consumers valuing different components. A CSR label can be a source of competitive advantage in the market (Galarraga, 2002). Although the consumer's perception about the quality of the product, value and purchase intentions do not differ significantly between products with positive environmental messages or product without any environmental message, the information of being environmentally green or with harmful effects on the environment has a greater impact in consumable products (Borin, Cerf, & Krishnan, 2011). Regarding food packaging, it should ensure safety, health and quality of food (Marsh & Bugusu, 2007). The packaging waste can have a reduced effect on the environment by selecting ecological materials (Azad & Masoumi, 2012).

3 Research Methodologies

This paper researches the field of social responsibility communication through the packaging of retail brand products. CSR in packaging is identified in the symbols and information presented on labels, both voluntary or mandatory. There are few studies that focus on sustainable development in retail sector and research this concept from a consumer perspective (Lavorata, 2014). In this sense, this paper describes the CSR disclosure of retailers' brands through the packaging of their products, such as product origin, nutritional information, product description and packaging environmentally friendly. Then, the researchers compare that communication with the perceived positioning of consumers about the retail company.

First, a diversified basket of products from seven Portuguese retailers was analysed to ascertain which information was presented on packaging. It was decided to analyse the three symbols / information that appear most on product labels under research. The researchers verified the presence of the eco symbol as the most prevalent symbol in the retail brands' packages of the sample, followed by the daily dose information. The nutritional semaphore also has plenty of use in the packaging of the brands analysed. There is also a greater emphasis on the opening and food safety as well as the presence or absence of allergens. It was also noted that the product certification feature is not something that retailers pay special attention. The labels analysed contain information related to environmentally friendly products and the European Ecolabel, though the sample considered only hygiene products and detergents.

The CSR approach disclosure by retail companies in official communication was compared with the results of the content analysis conducted to the labels and packages of the sample products of their own brands. After assessing the consistence of CSR corporate communication with the CSR presented in packaging, a survey was implemented to consumers of seven retailers in the north of Portugal to compare with the positioning of retail brands perceived by consumers.

4 Discussion and Results

The quantitative analysis of the answers from 539 consumer concluded that the CSR information in packaging does not reflect the positioning consumers have about retailer brands. The results show that the group of respondents that makes more than 50% of purchases in retail brand products stands out because of the importance given to price, previous experience and promotional campaigns. On the other hand, this group gives less importance to the brand equity. The quality of the product has proved to be of high importance for both groups - consumer who buy most retail brands and consumers who buy most private labels. Regarding the other characteristics like the type and functions of packaging, design of the package, labeling, eco-packaging, recycled material and campaigns, the importance attributed does not depend on the percentage of retail brand products purchased by the consumers under analysis.

The importance attributed to the social responsibility parameters presented in packaging, highlights the presence of Allergens, the recommended daily consumption, the fact of being an organic product, the Eco symbol and the European eco-label. It was also possible to verify that the importance attributed to the characteristics of social responsibility does not depend on the frequency with which respondents read packaging. It is observed that the level of information about sustainability distinguished consumers in the importance of social responsibility present on packaging, as previous highlighted in the literature that knowledge is a significant factor for consumer ecological and customer perception and value of sustainable products (Suki, 2014; Tansakul et al., 2018). The study identifies that consumers consider perceiving retailer's CSR positioning through the packaging of own brands. However, the CSR information presented in the packages under analysis is not reflected in the positioning of the retailers perceived of consumers.

5 Conclusions

The paper expands knowledge about the fit between corporate social responsibility and consumer perceptions, in the particular sector of retail distribution brands. The results have implications for retailers to develop a better label communication about the CSR concerns in order to better target sustainable consumers, which are increasing in younger generations. The study reflects data from a single region, in Portugal and a wider sample might be analyzed in future research.

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PARALLEL SESSION 14

STRATEGIC MANAGEMENT AND SOCIAL ECONOMY ORGANIZATIONS – A METHOD PROPOSAL TO ANALYZE ITS IMPACT

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Extended Abstract

Abstract

The present paper intends to develop an analysis about how strategic management is essential for the sustainability of social economy organizations. In fact, even though those organizations are non-profitable and aim to achieve social goals, it is necessary that they can apply strategic tools to improve their results. Above that, human resources must also be prepared to implement this kind of tools and to manage those organizations as they had profit scope. As we could already understand, most of the social organizations studied only use some of the tools of strategic management by legal imposition or by requirement of the financing entities. This situation results in poor efficiency of these tools and a reduced impact on improving organizational sustainability. In this paper, we intend to present a survey proposal, developed by an applied research for social economy, that can be applied on social organizations to understand the real impact of the use of those tools on their efficiency and sustainability. The analysis survey proposal was already tested on several social organizations, geographically confined to the north of Portugal (in social organizations of 3 municipalities). The adopted methodology fits into the bibliographic exploration, supported by techniques of document and content analysis, being the investigation essentially of descriptive type. The expected results will be presented as a paper review with a survey proposal, emphasizing its importance and how social organizations managers can improve their role in inclusive and socially responsible societies.

Keywords: strategic management; sustainability; social organizations; survey.

1 Introduction

Management throughout its evolution has become more complex and has been present in organizations and businesses (Baranger, Helfer, Bruslerie, Orsoni, & Peretti, 1993). This is the way to achieve results, given what the organization wants and how to do it. Strategy is understood as a plan of the organization, where the main objectives of the organization, the policies by which it is governed and the actions to achieve the desired results are presented. It can help guide organizational resources, and organizational decisions determine the direction the organization will take (Quinn, 1998).

Social Economy Organizations have specificities and particularities, because of the scope and purpose of this kind of non-profit organizations.

The system of values and principles of conduct of popular associations, which was defined throughout the history of the cooperative movement, served as a basis for the formation of the modern concept of social economy, structured around cooperatives, mutual societies, associations and foundations (Comité Económico e Social Europeu, 2017, p. 7)

Nevertheless, these organizations also need to be able to respond to the challenges of sustainability and ensure the efficiency of their resources.

2 Literature Review

The organizations of social economy were appearing in society, as the state delegated responsibilities and competencies to third parties that it could not manage (Costa, 2016) and also have their own characteristics, i.e., they are "organizations", "private", "autonomous", not profit-making, and "voluntary" (European Economic and Social Committee, 2017, p.13). Thus, these organizations are directed towards society and, in many situations, are the first ones to respond to social needs and problems, so their importance has been growing and they need to be more increasingly responsive to society. (Decree-Law no. 172-A / 2014 - Statute of Private Institutions of Social Solidarity, 2014).

As we could already understand throughout our previous research, most of the social economy organizations studied only use some of the tools of strategic management by legal imposition or by requirement of the financing entities. This situation results in poor efficiency of these tools and a reduced impact on improving organizational sustainability. They increasingly feel the pressure to respond to the constant challenges of today's society. Reinforcing the knowledge, skills and behaviour of social managers is an inevitable factor in the adjustment of these organizations, not only to the current macro-structures, but also to the micro level of each region where organizations work. "Management improvements can lead to surprising short-term results in terms of efficiency in the use of organizational resources and effectiveness in results" (Falconer 1999: 12).

In Portugal, in a social context where market logic prevails, social economy finds itself between two logics: the logic of profit and a logic of reciprocity and teleological solidarity. So, social economy organizations need capital so they can be socially useful, considering the specificities of each organization. The quality of its services is its fundamental value and its own identity. Therefore, it is different from what is happening in businesses, and that in what is produced is something profitable and achieved through the reproduction of capital (Namorado, 2017).

Sustainability notion became known worldwide in 1987 through the Report Designated as Our Common Future (known as the Brundtland Report), designed by the United Nations World Commission on Environment and Development. In this report, sustainability is related to environmental protection, social and economic development, referring to the awareness of common responsibility as a factor of change, through the exploitation of material resources, financial investments and technological development, in a balanced and fair way (Commission on Environment and Development, 1991).

Falconer (1999) says that sustainability has three goals: the viability of organizations, their subsistence in seeking to meet social needs and complementarity in the relationship established with other organizations, local action groups or other entities of civil society and with the Welfare State. Social economy organizations are specially concerned with social or environmental sustainability. However, they still must face the problems of economic sustainability. One of the biggest challenges is the need to continue to respond to social needs, using a more diversified financial support base, where public support is not the only source of funding. The sustainability of organizations requires, therefore, the planning and implementation of long-term strategies through a continuous process that promotes both cost reduction and increased own revenues (Sontag-Padilla, Staplefoote, & Morganti, 2012).

However, sustainability isn't just the resources that an organization lacks; but it is also related to the use of these same resources in an efficient way, in order to positively enhance the results achieved (Falconer, 1999).

Finally, we would like to emphasize that social economy organizations are less prone to assessing their performance against for-profit organizations for a variety of reasons: the value of their goods and services is not easily measurable; there is a situation of "decoupling", that is, those who benefit from the services do not bear the costs (Mendes, 2011, 42). Most of these organizations are created through voluntary contributions, without the investment of equity. Since they do not have the capacity to carry out indebtedness in the long term, nor do they have activities that guarantee them substantial positive results, they do not present a working capital fund that guarantees the sustainability of the organization (Mendes, 2011)

"Management improvements can lead to surprising short-term results in terms of efficiency in the use of organizational resources and effectiveness in results" (Falconer 1999, p. 12).

In this sense, there should be room to develop management skills in organizations. The increased expectations of impact and accountability of the mission of organizations that meet vulnerable needs require the adoption of promising practices that will captivate investment in this cause (Sontag-Padilla, Staplefoote, & Morganti, 2012).

3 Research Methodologies

The adopted methodology to our study fits into the bibliographic exploration, supported by techniques of document and content analysis, being the investigation essentially of descriptive type. The expected results will be presented as a paper review with a survey proposal, emphasizing its importance and how social organizations managers can improve their role in inclusive and socially responsible societies. To further clarify our research purpose, we define the following starting point: "What organizational dimensions should be analysed to understand the effectiveness of a social economy organization and how the directors' preparation and perception influence the implementation of strategic management tools and the very sustainability of these organizations?". Generally, the general objectives of this study are: 1) To understand the specificities of social economy organizations; 2) To perceive how the sustainability of organizations has become one of the key points for their management; 3) to present a proposal of a questionnaire survey, which helps the diagnosis of the current state of social economy organizations.

It is our purpose to present a survey proposal (questionnaire survey), developed by an applied research for social economy, that can be used on social organizations to understand the real impact of the use of those tools on their efficiency and sustainability. The analysis survey proposal was already tested on several social organizations, geographically confined to the north of Portugal (in social organizations of 3 municipalities).

4 Discussion and Results

The survey proposal that we intend to present was organized in different sections, with 44 questions, seeking to analyze all the dimensions of strategic management, according to management functions: human resources management, strategic management and financial management (Anheier, 2005; Mações, 2018; Teixeira, 2015). "The questionnaire survey from a sociological perspective is distinguished from the simple opinion polling because it aims at verifying theoretical hypotheses and analyzing the correlations that these hypotheses suggest" (Quivy, 1998, p. 188).

Synthetically, our questionnaire survey covers the following sections:

- 1) organization characterization (legal form, services, number of employees and contract relationship) – in this area we try to understand which typologies are most prevalent, as well as to analyse which services are offered and if human resources are stable, by analysing their employment relationship to each organization;
- 2) Characterization of the respondent (gender, age, educational qualifications, area of education, professional position, years of experience, indication of complementary training in strategic management) – this section help us to know better human resources and their technical skills and to understand how organizations are hierarchically structured;
- 3) strategic planning (existence of plan, duration, elements involved in the preparation, monitoring and evaluation of the plan, existence of vision and mission, identification of objectives and values, existence of organization chart, decision making procedure, identification of management tools used) – even though almost every organization affirms that use strategic tools, we intend to understand its real impact to daily efficiency and long-term sustainability. In this sense, we try to identify if there is a specific responsible for the making, monitoring and assessment of strategic plan. Besides that, we also can identify how this is done in each organization, and how decision-making process is developed, by using open questions in which each respondent will be able to describe, according to their perception, the process and practical procedures;
- 4) budget planning (existence of plan, duration, elements involved in the preparation, monitoring and evaluation of the plan, analysis of revenues and costs, analysis of financial performance, sources of financing, identification of major difficulties in financial management, identification of the importance of the establishment of partnerships) - the structure and pattern used in this section is similar to the section on strategic planning, combining closed and open questions. Above that, in this section it is also our goal to understand how social economy organizations are innovative regarding fund raising and how stakeholders and partnerships sustain activities and organizational work;
- 5) communication and marketing plan (existence of plan, duration, elements involved in the preparation, monitoring and evaluation of the plan, forms of internal communication, forms of external communication) - marketing and communication issues/policies is one of the most neglected areas in the management of social economy organizations. Therefore, the structure and pattern used in this section is like the section on strategic planning, combining closed and open questions and we try to identify every effort made by organizations to improve communication skills with workers, customers, suppliers and community;
- 6) social representations about the importance of strategic planning in social organizations. Most of the presented questions have scale dimension, as well as allow to choose different options. This final section is very important for any diagnosis, because it is crucial to understand how social managers perceptions are evolving (or not) regarding how they can contribute to improve organizational sustainability, through strategic management tools.

The application of the questionnaire survey and the choice of quantitative methodology will allow quantitative data to be processed (Quivy & Campenhoudt, 1998).

5 Conclusions

With the validation of this data collection instrument, it will be able to be applied to any organization in the social sector, in order to enable the systematization of organizational diagnoses and the identification of problems to be solved. In fact, we believe that in-depth knowledge about the internal, general and transactional environment of each social economy organization will enable their daily and long-term performance, improving this economy sector results. For this, the professionalization and awareness for strategic management of social managers is a key point. The survey structure we present will help social managers, as well as future researches to understand organizational status in order to allow a clear definition of strategies and targets that are feasible and appropriate to each reality.

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PARALLEL SESSION 14

SUSTAINABLE INNOVATIONS AS WAY TO ACHIEVE SOCIAL INCLUSION

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Extended Abstract

Abstract

The sustainable innovation put together environmentalism's protection of natural systems with the notion of business innovation while delivering essential goods and services that serve social goals of human health, equity, and environmental justice. In this way, sustainable innovation carries with it a concern regarding social responsibility. Inclusive organizations employ diverse individuals (people from diverse backgrounds or communities, and/or volunteers). These are learning-centered organizations that value the perspectives and contributions of all people, incorporating the needs, assets, and perspectives of communities of color into the design and implementation of universal and inclusive programs. However, very little has been written on the subject. This can be attributed to a difficulty in measuring the results obtained, and in the difficulty of conceptualizing and theorizing innovation as a mechanism for social inclusion in organizations. We outline opportunities for the development of theory and empirical research around this construct in the fields of innovation and sustainability.

Keywords: Innovation, Sustainable Innovation, Social Inclusion.

1 Introduction

The inclusion in the organizational environment of "minorities" is one of the major contemporary challenges in any country. Over the years, the way society has sought to respond to the needs of these minorities has been delimited by the logic of charity and philanthropy. However, basing humanitarian action primarily on the ethics of charity is not sufficient for two reasons: first, because such charity seldom demands political responsibility from others; second, because the virtue of charity can often be distorted into dysfunctional and patronizing relationships between western aid givers and their 'beneficiaries' that can be colonial and even racist at heart (Slim, 2002). It is necessary, therefore, to involve individuals in production practices that guarantee their independence, which can happen through the insertion into the organizations.

Innovative practices, especially sustainable innovation, have greatly influenced the inclusion of people in the organization. However, despite this influence, very little has been written on the subject. Over time, the concept of "sustainable development" has been broadened and deepened to add to the ecological issues of human and social development. Although there is no consensus on sustainable development (Velazquez, Esquer, & Munguia, 2011), there is an agreement that includes economic, social and environmental.

To reverse this situation, Elkington (1998, p. 142) suggested: "to radically define the new visions of the meaning of social equality, environmental justice, and business ethics. This requires a better understanding not only of the financial and physical forms of capital but also of social, human and natural capital." Only then will the company survive in the long run - business sustainability.

The economic result is fundamental to the financial health of the company, but in the long run, the organization will not survive if it does not worry about the social and environmental sustainability of its activities. Social sustainability implies in the humanitarian context of the business and is related to the themes: poverty, income inequality, diseases, access to health, etc. Environmental sustainability considers the impact of business on the quality and quantity of natural resources, on the environment, on global warming, on biodiversity, on waste management, on reducing energy consumption and resources used, on using and producing alternative energy, and increased pollution and emissions management (Haugh & Talwar, 2010).

This paper aims to discuss sustainable innovation as a way to include minorities in organizations. In this way, our focus, within the concept of triple bottom line, will be the social responsibility.

2 Literature Review

2.1 Innovation

It should be pointed out that innovation consists of the introduction of new consumer goods; new production or transport methods; new markets; new sources of raw materials, and new forms of industrial organization created by firms (Schumpeter, 1942). The nature of capitalism is the transformation provided by the introduction of innovations, which continually revolutionize the old and create new elements, constituting what Schumpeter (1942) called of "creative destruction". Companies need to innovate not only to survive, but also - and especially - to make a profit.

Innovation is a process that aims to materialize ideas that allow the generation of value, from ideas, to companies and consumers (Birkinshaw, Hamel, & Mol, 2008; Tidd & Bessant, 2014). Innovation takes place when new ideas or new ways of thinking are valued and successfully introduced by organizations as a product or service on the market (Afuah, 2003).

Regardless of the concept of innovation used, it is a fact that represents a great challenge for organizations and is permeated by failure. In this way, the analysis of innovation must go beyond its definition; and one must therefore understand how the innovative process takes place (Tidd & Bessant, 2014).

2.2 Typology and Degrees of Innovation

In most cases, innovation does not take place in a "radical" way, to the point of changing the nature of products and processes and promoting the "creative destruction" portrayed by Schumpeter (1942). Most innovations are incremental improvements, that is, ideas are used in new models of existing products and services, or adjustments in organizational processes (Afuah, 2003, Tidd & Bessant, 2014). Among the types of innovation emphasized by the Oslo Manual (OECD / Eurostat, 2005) there are technological innovations of product and process. Organizational and managerial innovation includes the introduction of modified organizational structures, to the implementation of advanced management techniques and the implementation of new or significantly altered strategies (OECD / Eurostat, 2005).

Innovations - whether of product, process, organizational, among others - are essential not only to broaden or sustain the growth rate of countries and to change the direction of economic progress, with the purpose of bringing improvements to the quality of life, are for the conservation of natural resources in the long term and improvement of the environment.

Based on what has been stated, expressions such as "eco-innovation"; green innovation and sustainable innovation are also in focus when it comes to innovation. They will be explained in the next topics.

2.3 Sustainability and Sustainable Development

This paper aims to discuss how sustainable innovations can contribute to the creation of companies that are more inclusive. It is assumed that companies that adopt Sustainable Development Corporate care about the social aspects by looking more deeply at their employees and at problems related to society. Innovation emerges as a tool that will assist companies in this goal. A sustainable company is one that contributes to sustainable development while offering economic (profit), environmental (planet) and social (people) benefits. The structure of the Triple Bottom Line has roots in stakeholder theory, organizational management theory and business ethics (Hart & Milstein, 2003). Corporate sustainable development implies that companies, instead of giving weight only to their financial results, should also seriously consider the environmental and social impacts of their products and services (Elkington, 1994; Robinson, 2006).

The problems that affect society and the environment have been incorporated into business issues as a necessary condition for business continuity. Elkington (1994, p. 142) suggests, "radically defining the new visions of the meaning of social equality, environmental justice and business ethics".

Finally, corporate sustainable development implies that companies, instead of giving weight only to their financial results, should also seriously consider the environmental and social impacts of their products and services (Elkington, 1994; Robins, 2006).

Various stakeholders - such as governments through laws, regulations and implementation; professional societies by means of standards and norms; nongovernmental organizations (NGOs) through public pressure, and customers for loyalty-involve organizations to embrace sustainable development (Escobar & Vredenburg, 2011). Second, some corporations advocate and embrace sustainable development because they accept a higher level of moral obligation and responsibility than is required by law enforcement (Robins, 2006). In line with this view, Hansen, Grosse-Dunker, & Reichwald (2009) argue that sustainable innovation is essential, both at the normative, moral and at business level. On the moral side, companies have not only the responsibility, but also the ability to contribute to solving global challenges of society and the environment.

In the next topic, we present concepts and the current context of the discussion about sustainable innovation.

2.4 Sustainable Innovation and Previous Studies on the Subjects

Innovations for Sustainable Development are usually more complex, since they must pay attention to the demands of the stakeholders, and more ambiguous, since the different parties have contradictory demands (Hall & Vredenburg, 2003). From the Schumpeterian Economy, many neo-Schumpeterians have studied innovation in industries, mainly manufacturing, with the aim of increasing the competitiveness of companies (Tidd & Bessant, 2014). The findings of Venn & Berg (2013: 104) indicate the need for "external benefit management". According to Greenland, Levin, Dalrymple & O'Mahony (2018) despite of drip irrigation (DI) water efficiency is recognized this kind of irrigation is not the determinant factor to the farmers' criteria of selection. Björklund & Forslund (2018: 209) found that sustainable logistics innovations (SLI) process consists of five phases: 1) Identify problems, 2) Brainstorm ideas, 3) Find solutions, 4) Quantify sustainability benefits and 5) Implement, follow up and spread. In addition, the results pointed to a "pre-phase" not yet found in the literature that serves to actively identify problems.

Table 1 . List of Authors, Sector, Type of Research and Objective

Sector	Types of research	Objective	Authors
Electronics	Nested Cross-case	Offer a novel perspective on "deep benefit management" in inclusive business ventures at the Base-of-the-Pyramid (BoP)	Venn, Berg (2013)
Food production	Depth interviews & Survey	Examine impediments to the adoption of sustainable water-efficient technological innovation in Australian agriculture	Greenland, Levin, Dalrymple & O'Mahony (2018)
Logistics	A Multiple Case Study	Explore the sustainable logistics innovations (SLI) process, in order to identify critical factors, challenges as well as actors involved.	Björklund & Forslund (2018)
Food	Case Study	Investigate and present the way in which a food start-up can develop business model innovations, taking into account the importance of social and environmental issues	Franceschelli, Santoro & Candelo (2018)

Source: Authors (2019)

It is interesting to note that none of these studies indicated in table 1 relates Social Innovation with Social Inclusion.

3 Research Methodologies

For this study, we chose to use the systematic literature review. Systematic review of literature or simply systematic review is the scientific research that brings together relevant studies on a research topic, using the specialized literature database.

4 Discussion and Results

In the spectrum of sustainable innovation, considering the economic nature and operational aspect of the concept of innovation, environmentally sustainable innovations, or eco-innovations, have been more widely studied. Hellström (2007) explains that the dimensions involved in environmentally sustainable innovation are not only focused on the traditional dimensions. These dimensions can be analyzed through eco-efficiency criteria, defined by the reduction of environmental impact, use of renewable resources, product life cycle in line with the planet's renewal capacity. A justification for the few studies in social innovations may be related to the difficulty of measuring their results, in the inability to conceptualize and theorize innovation as a mechanism for including the wider society in socio-economic and development activities, or the lack of appreciation of the potential roles that innovation can play in development (Daniels, Ustyuzhantseva & Yao, 2017).

The use of Assistive Technologies (Cook & Hussey, 1995) has been widely used by financial institutions; call center and telecommunications companies (Jaerger, 2006) in order to allow greater accessibility for people with physical disabilities. However, there are few academic studies, or entrepreneurs, that present the results of the use of these tools.

The use of information and communication technologies (ICTs), and equal access to electronic information and services has become an important area of concern for social justice for those who have been marginalized in other areas of society (First & Hart, 2000). The correct use of ICTs can help include not only people with physical disabilities in the labor market. Moreover, as a form of knowledge transfer (Roberts, 2000). In this field, there are a number of companies using ICTs to promote improvement in school education for poor children.

In this way, ICTs, besides allowing school inclusion, and consequently insertion into the labor market, also allows the shortening of distances, making it possible for people from less favored regions to enter virtually markets in more developed countries.

5 Conclusions

Sustainable management of innovation is therefore essential, both at the normative (moral) level and from the business point of view. From the moral point of view, companies have not only a responsibility, but also the ability to contribute to solving the global challenges of society and the environment. From the business standpoint, regulatory impulses for social and environmental innovation are becoming more pronounced due to anticipated changes in laws, and regulations and a visionary drive for such innovations to respond to new business opportunities (Hansen, Grosse-Dunker & Reichwald, 2009). The ecological and social variables, therefore, are new sources of innovation that are used to differentiate products and services, redefine competition and create competitive advantage (Hansen, Grosse-Dunker, & Reichwald, 2009). Although some conceptual models of sustainable innovation (Hart & Milstein, 2003) exist in the literature, little empirical work investigates how it can be used to make the company more inclusive. In relation to value delivery, a topic of growing significance is the use of innovation to minimize damage to the environment and to improve social conditions, as well as increase the economic profit of the company. This is often labeled as the triple bottom line approach (TBL) (Elkington, 1994; Hart & Milstein, 2003) that the focus of the company must be to achieve economic, social and environmental results. In the research on sustainable innovation or sustainable development innovation, the term TBL has been widely used, since the purpose of innovation is to offer economic, environmental and social benefits (Chang, 2011; Hart, & Milstein, 2003; Lybæk, Christensen, & Kjaer, 2013).

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PARALLEL SESSION 15

COMMERCIAL AND SOCIAL ENTREPRENEURSHIP: POSSIBLE DELIMITATIONS AND COMPLEMENTARITIES

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Extended Abstract

Introduction

The paper discusses the concepts of commercial and social entrepreneurship with the objective of demonstrating possible connections and the difficulty of establishing a clear delimitation between them (Murphy et al, 2006; Rao, 2004). Both present difficulties of a consensual conceptualization in the literature (Farmer et al., 2008). Apparently, they would be two sides of the same coin, but with substantially different objectives. If in commercial entrepreneurship, profit is the main goal, in social entrepreneurship the ultimate purpose would be the minimization of social problems. In any case, the search for a definition for these concepts is a difficult task (Mair and Marti, 2006). Concerning social entrepreneurship, one of the reasons for the difficulty of obtaining a more consensual understanding among authors is the lack of clarity arising from the many situations in which the concept is operationalized, such as environmental problems, vulnerability scenarios and social deprotection of people. For this reason, and because literature is scarce in approaching and problematizing the relationship between the concepts of social and commercial entrepreneurship, it is essential to start thinking about a possible complementarity and not just consider them as merely antagonistic concepts. Therefore, this paper seeks to demonstrate that both definitions can have points of intersection, as they are not mutually exclusive and can even be complementary in some situations.

For this purpose, a case study was carried out in Mirandês Plateau, in the northeastern region of Portugal, with a company specialized in the production of donkey milk soap and later also dedicated to ecological tourism. This case was chosen because it combines characteristics that corroborate the hypothesis that the concepts of social and commercial entrepreneurship can be seen as complementarities. The businesspeople analyzed demonstrate that they seek financial profitability, while recognizing the importance of environmental preservation and community well-being as a means of sustaining their business. The main techniques for collecting data in this study were the open and semi-structured interviews. Finally, the examination of collected empirical elements was carried out based on content analysis.

Conceptual bases

In 1730, Richard Cantillon used the term “entrepreneur” to refer to a self-employed, risk-tolerant worker who is concerned with his own economic well-being. It would be the origin of the understanding that the act of entrepreneurship is linked to financial gain and hence its correspondence to commercial interest. At the beginning of the Industrial Revolution (1830), Jean-Baptiste Say further extended the meaning of the term, incorporating management skills as inherent characteristics of the individual considered an entrepreneur (Outcalt, 2000). Nevertheless, providing a complete definition for the entrepreneur concept is no easy task. The main difficulty seems to stem from the breadth of interests of different scientific fields on the subject, such as psychology, sociology, economics, or management (Murphy, Liao and Welsch, 2006). Rao (2004) states that the search for a definition of an entrepreneur is a challenge.

For Schumpeter, the entrepreneur is the one who makes new combinations of productive, capable and economic development, namely the following: “the introduction of a new good”; “the introduction of a new production method”; “the opening of a new market”; “the conquest of a new source of supply of raw materials or semi-manufactured goods”; and “the constitution or fragmentation of a monopoly position” (Schumpeter 1982: 49). In addition, it is also the one who takes risks.

However, without engaging in a deep analysis of the various concepts and definitions of the term entrepreneur or entrepreneurship, Honig’s concept (2019:3) can be considered a starting point. Honig’s concept considers entrepreneurs to be “the individuals who create new organizations”. In this sense, strict commercial or financial interest is not referred to as a distinctive feature of entrepreneurship, although it may be argued that this idea is implicit.

Within the broad field of entrepreneurship, the so-called “social entrepreneurship” has aroused the interest of academia and governments. Like others, this configuration of entrepreneurship also runs counter to the difficulty of a definition that enjoys consensus. The authors are also seeking a conceptual consensus for this type of entrepreneur, as well as seeking to differentiate it from the traditional entrepreneur who is looking for profit (commercial entrepreneur). According to Farmer et al (2008), social entrepreneurs engage in activities that can empower people and communities for their own development.

The activities of social entrepreneurs and their organizations are just as important today as the activities of commercial entrepreneurs (Farmer et al., 2008). Although the subject has attracted growing interest in the academic milieu, there are questions of terminology regarding the terms “social entrepreneur” and “social entrepreneurship” that have not yet been resolved. Criticism tends to focus on the definition of the concepts – considered insufficiently defined – and their relation to the neighboring conceptual construction of commercial entrepreneurship (Mair and Marti, 2006).

However, in the search for a definition of social entrepreneur, Austin et al. (2006) argue that the social entrepreneur is that who is motivated to approach social problems using business techniques. Harding, Jones-Evans, and Levie (2002) consider social entrepreneurship as a business activity with objectives that refer to the general well-being of the community, generating profit for re-investment in the social enterprise of the common good. Dees (1998), trying to accommodate the conceptual differences, believes that social entrepreneurs can be perceived as a “kind” of entrepreneur, who is comparable to commercial entrepreneurs in many respects, but has different business motivations and spheres of operation. Thus, according to Oliveira (2004), social entrepreneurship can be understood as an innovative process aimed at a social, plural or collective dimension. This process usually starts from the observation of a local problem-situation requiring a solution.

In addition, when there is a company that acts commercially in search of profit and enters the social field at the same time, we have what is called hybridity. The term hybridism has its origin in biology, referring to the combination of different species (Brandsen, 2005). Hybridism reinforces the idea of joining different things together. According to Wood (2010), the term "hybrid organization" emerged in the 2000s to designate firms that combine business and social entrepreneurship. Battilana and Lee (2014) also proposed that social enterprises that combine business and charity represent an ideal typology of hybrid organizations. Other authors associate hybridity with social entrepreneurship, since they combine their business model with social aspects and profit (Dees, 1998; Brandsen et al., 2005; Evers, 2005; Elkington and Hartigan, 2008; Smith, 2010; Doherty et al., 2014; Ebrahim et al., 2014; Skelcher and Smith, 2015).

Some research has shown that entrepreneurs are interested in environmental issues, since environmental preservation is a way of reducing costs and preserving sustainability (McMullen and Warnick, 2016). The authors propose that entrepreneurship can offer solutions to environmental abuses because it internalizes some of the main costs of production and operations.

Methodology

Regarding the methodology, two methods were used: the case study method and the biographical report (life history). The fundamental purpose of the case study is to intensively study a given social unit (Godoy, 1995). The research also relied on biographical accounts that can be understood as "retrospective reports of an individual's personal or oral experience, written or otherwise, relating to facts and events that were significant and constitutive of their lived experience" (Chizzotti, 2011: 101). The research aimed mainly to understand the experiences of a couple of neo-rural entrepreneurs and the subjectivity of their meanings of this experience, thus giving them a qualitative character (Godoy, 1995). As for data collection, the main procedures used were techniques on the ground, open interviews and semi-structured interviews. The dynamics of the semi-structured interview consists of the elaboration of a script with essential questions for understanding the subject being studied, complemented by other questions that arise spontaneously, motivated by the circumstances in which the interaction with the interviewee takes place (Manzini, 2004). The collected data were recorded in audio support and, later submitted to examination using the content analysis technique. According to Chizzotti (2006: 98), "the purpose of content analysis is to critically understand the meaning of communications, its manifest or latent content, explicit or hidden meanings". Moreover, Flick (2009: 291) points out that content analysis "is one of the classic procedures for analyzing textual material, no matter what the source of that material".

The case of planaltic companies

Two companies were founded by two entrepreneurs in the heart of the Mirandês Plateau, in the northeast of Portugal. The first one, created in 2009, is focused on the production of donkey milk, with the purpose of transforming this raw material into cosmetics, namely soap, for commercialization within the Portuguese territory and for export. Its institutional mission is to enrich the region of Trás-os-Montes and its human, cultural, and natural heritage. The other company, founded in 2010, develops projects in the area of conservation and nature tourism, organizing tours for observation and photographic registration of birds. In order to do so, it has shelters for observation and photography, which allow people to follow animal behavior. This second company also operates in the hospitality area, with three guest houses. In addition to these activities, it also advises Spanish organizations and government on environmental conservation, whose scope is the wildlife of the Royal Eagle and Bonelli's eagle. Bonelli's eagle is a species that is threatened with extinction. Most of the consulting services are done in the Douro Natural Park, both on the Portuguese and Spanish sides, "since the birds do not have borders", as expressed by the businesswoman. The two companies employ 5 people.

The entrepreneur is a biologist born in Porto and her husband, a native of Foz Côa (northeast of Portugal). He started an Environmental Engineering course but did not complete it. In addition to the two companies belonging to the couple, the biologist is also an individual entrepreneur, an agricultural producer, whose main activity is the production of donkey milk. She met her husband in the Mirandês Plateau when doing her academic internship. The businesswoman was very fond of every natural part, of fauna and nature. She had always been linked to environmental protection associations while studying biology. It was through one of these associations that she finally got to know the Mirandês territory and later decided to move to the plateau. The first time she came was to watch the eagles nesting in the territory. The region encourages the proliferation of birds of prey due to the natural conditions of the terrain. According to her, there is a very rich community of birds of prey, known as rupicolous, which make their nest in the cliffs and are under threat of extinction. These birds and their habitat were the reasons that led her to explore the region. From the onset, having had contact with the territory, created a strong emotional bond with the place.

In the late 1990s, as the academic scholarship neared its end, the couple began to develop a financial plan to permanently establish themselves in the Mirandês plateau. In the year 2000, that is when they met people in France and Belgium who had soap production projects based on donkey milk. From this contact came the inspiration to create the company. At the time, the couple already had two donkeys as pets, but no commercial exploitation. After a first attempt where they made about 450 soaps from donkey milk, they sold them and invested in more donkeys. Today they own 14 animals, have a cosmetics shop in the city of Oporto and sell to large centers in the country, namely Lisbon, as well as other countries, such as France. As can be seen from this example, the action of creating a business is in line with Honig's concept (2019:3), referred to above.

The husband is the main person responsible for the tourism company, although the couple works on all fronts together. She deals mainly with the production of milk and cosmetics, while he deals with tourism. At this moment, the entrepreneur is forming an environmental tourism network. As he has many contacts with other entrepreneurs operating in the field of environmental tourism, he is forming a network that can cover the whole country. Therefore, if an ecological tourist wants to explore the full potential of Portuguese tourism, the plan is to have tourist bases scattered throughout the continental territory. Thus, according to his own words, if a tourist wishes to observe the eagles, he has all the tourist services to attend to this customer (transport, accommodation, observation stations, etc.). If the tourist wishes to observe other animals not related to birds in the Alentejo or mountain goats in the Serra da Lousã, there will be a partner who can attend to this customer. It is a specialization under construction. As a result, it seems that entrepreneurs act according to Schumpeter's (1982, p. 49) considerations mentioned previously. As a business philosophy, the couple prefers to use local services, which are sometimes more expensive compared to other options of companies located outside the region. The reliance on local services is seen as a form of investment that promotes the economy of neighboring villages and, indirectly, helps themselves. Therefore, packaging companies, design, transportation and other services are all hired nearby.

In addition to these operating principles and corporate purposes that seem to converge towards the environmental protection and the genetic preservation of the Mirandês Asinine race, the entrepreneurs also seek to exert social influence in the community. For example, they have helped create a support service for the elderly in the village where they are established. As the village has a high number of people over 70 years old and living alone, they then collaborated with other people to create a care service, whereby a social worker goes to the home of these elderly people to measure their blood pressure, control their diabetes, and take them to medical appointments. If an elderly person must go to a bank located in a larger center, such as Sendim or Miranda do Douro, or has to make purchases, that person will take them as well. There is a car associated with this social service, whose purpose is the transportation of the elderly. These types of behavior seem to indicate that the entrepreneurs carry out entrepreneurship of social characteristics, in accordance with the concepts of Dees (1998) and Oliveira (2004), mentioned above.

Considerations

As can be seen, the companies emerged from the couple's strong motivation to settle in the Mirandês Plateau. From the onset, the natural beauty of the region, attracted them to settling there. The businesswoman had long been attracted to nature, while her husband already had rural roots. Therefore, the couple wanted to settle there because they identified with the territory. The idea of starting a business there first came from contacts with the outside, France and Belgium, where people were already developing projects related to the production of donkey milk.

Besides being an endangered species, Mirandês donkey also constitutes a regional cultural symbol. Thus, donkey milk production can perhaps be characterized as something that goes beyond the single purpose holding for profit, considering that an animal species threatened with substitution by agricultural technology (tractors, mechanical implements, etc.) is also being preserved. The same reasoning can be used for the environmental conservation company. Naturally, for a company to succeed, there is a need for an interested consumer market. Otherwise, there is no investment from the part of the entrepreneur. On the other hand, the social purpose of the company is a contemporary demand, which is the need for environmental conservation to preserve endangered species, such as Bonelli's eagle. In both cases, the need for profit to ensure business continuity is present. However, this innovative process started from the observation of a local problem concerning the threat to donkeys and to eagles, which demanded a solution, as Oliveira (2004) explains.

Other aspect in this case study that seems to go beyond the commercial entrepreneurial concept is the policy of hiring services from local businesses. This aspect embodies a principle of endogenous development that can be helpful to both enterprises in the future, even though it is tenuous, considering that we are talking about only two companies.

Also, another point that is not directly related to the concept of entrepreneurship, whether social or even commercial, is the concern with the local elderly population. However, in this case, entrepreneurship was a crucial element in organizing support services for the elderly.

In conclusion, in this case study there are elements of commercial entrepreneurship and social entrepreneurship, without one concept antagonizing the other. In fact, they are complementary elements. There would be no commercial exploitation of donkey milk if there were no preservation of the species, nor would there be environmental tourism if there were no eagles.

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PARALLEL SESSION 15

TRIPLE HELIX MICRO- FOUNDATION: A CASE STUDY IN PORTUGUESE TECHNOLOGY BUSINESS INCUBATORS

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Extended Abstract

Abstract

Technology business incubators are often mentioned in Triple Helix literature. Whether in the co-evolution of university-industry interaction or occupying a role at some point in the intersection between Academy, State, and Industry. The objective of this study is to analyze the Triple Helix micro-foundations from two important technology business incubators founded by Universities in Portugal. The analysis of the cases revealed that the academic connection did not hinder the discovery, consensus, and consolidation of a boundary space. Some conditions have been identified, such as the existence of well-established interface institutions in universities as well as the autonomy of incubators. Findings of this study revealed that the creation steps do not happen in a linear approach and are continually being readapted with the emergence of new partners. Despite the identified autonomy, the high participation in projects promoted by European Union funds opens up new avenues for further research.

Keywords: Triple Helix, Technology Business Incubator, Boundary Space.

1 Introduction

Technology business incubators (TBI) are mentioned in Triple Helix literature in the co-evolution of university-industry interaction (Henry Etzkowitz, 2002) or as innovation organizations that offer new modes of interdisciplinary knowledge production among Triple Helix partners (Henry Etzkowitz, 2003). Regardless of the definition chosen, it is increasingly clear that TBIs have always been part of the debate about how the Academy, State, and Industry cooperate. The recent discussion on hybrid autonomous organizations (HAO) and boundary spaces (Champenois & Etzkowitz, 2018) presents steps for the formation of these entities that now also integrate the set of terms capable of expressing the essence of TBIs. The academic context of the cases analyzed in this study is an opportunity to check whether the stages of "Recognizing a gap," "Bringing Triple Helix representatives together" and "Designing an ad hoc solution (innovation space)" can also be applied to TBIs. The paper is organized as follows: the next section presents the conceptual background. The following section explains the methods used to collect and analyze the data. The fourth section presents the results. The fifth section provides an in-depth critical discussion of the results. In the last section, the concluding remarks are presented.

2 Conceptual background

2.1 Technology business incubator

According to Lalkaka (2000), the Technology Business Incubator (TBI) aims to support technology-based companies. Addressing the demands, the relationship with the university provides access to laboratories and technologies. University research combined with technology transfer is the second academic revolution (H. Etzkowitz, 2001). It means transforming laboratory research results into a marketable product.

The definition of TBI by Mian, Lamine and Fayolle (2016) summarize the contribution of several authors: "TBIs are property-based initiatives providing tenant firms with a portfolio of new venture support infrastructure, including: business services, networking (Bergek & Norrman, 2008), access to professional services (Sherman & Chappell, 1998), university resources (Mian, 1996) and capital (Aernoudt, 2004)."

2.2 Triple helix micro-foundation

The Triple Helix model design (Henry Etzkowitz & Leydesdorff, 2000) shows the diversity of interactions between the Academy, State, and Industry. The change from isolated spheres to a scenario in which institutions interact to innovate is a path without a predetermined route. According to Henry Etzkowitz (2011), Triple Helix dynamics has four levels: internal transformation in each of the helices, the influence of one helix upon another, the creation of a new overlay of tri-lateral networks and organizations from the interaction among the three helices and the recursive effect of the institutional spheres. The linear model of innovation is being replaced by new ideas and new ways of interaction.

In this new approach, it is necessary to understand how HAOs arise. It is the result of overlapping spheres. According to Champenois and Etzkowitz (2018), the formation process and HAO itself represents the boundary space. This area in which diverse actors cooperate and compete is the fertile ground for HAO creation. For the authors, the creation process consists of three stages (Table 1).

Table 1 - Stages to HAO formation process.

Recognizing a gap	Recognize the need, an existing gap.
Bringing Triple Helix representatives together	Build consensus among all in the problem formulation.
Designing an ad hoc solution (innovation space)	The Triple Helix elements recombining and guarantees of resources, including funding.

The implementation of these steps requires a person, group or entities capable of bringing together the different spheres and catalyzing the creation of HAO. This agent is the boundary spanner (Champenois & Etzkowitz, 2018). The independence of a HAO is very positive in this context because it allows HAO to integrate elements as it deems necessary and not only to fulfill the mission of an entity alone.

3 Methodology

The objective of this study is to analyze the three steps of boundary spaces formation process in the context of TBI founded by Universities. The case study (Eisenhardt, 2002) will be applied because it is necessary to investigate the dynamics of a process in different environments. The comparison between the cases can demonstrate if the boundary spaces were created as described in the literature.

The selected cases are relevant in Portugal country. The two incubators were created by Universities which together have more than 30,000 students and 306 postgraduate courses. These incubators have been established for many years and have won many national and international awards. The primary data were obtained from semi-structured interviews with managers of the incubators and Technology Transfer Office (TTO) of the associated universities. Secondary data such as management reports and other official documents were obtained from the institution's Internet portals, through research in enterprise databases and the Portugal government official journal. The data were analyzed applying the explanation building method (Yin, 2014).

4 Results

4.1 *Incubator INCI*

4.1.1 Recognizing a gap

The INCI was created in 1996 as a result of the interaction between regional actors. Although the University (UNVI) importance, the connection to the enterprise sector was decisive for the emergence of INCI. It is worth mentioning the proximity of a large telecommunications company that has always demanded professionals and services in the technological area for its operation. This company has a decisive role in the history and evolution of high-speed networks and mobile communication throughout Portugal. Its trajectory is marked by several mergers with other companies as well as a gradual transition from the state sphere to international private groups. Currently, its global research and development center is headquartered in the same city as INCI. In this case, the gap was not perceived by an isolated actor. There was a dynamic in the UNVI itself through its enterprise training and research activity and a developing telecommunications sector in full development that ended up involving each other mutually. It was therefore natural for UNVI to encourage technology transfer in economic value as well as for the local enterprise sector to benefit from such interaction.

4.1.2 Bringing Triple Helix representatives together

The university-enterprise office of UNVI has the mission of promoting interaction between businesses, academic departments, interface units, and other institutions. Initially, INCI was administered by this office. However, in 1998 a company was created exclusively to manage INCI. This company aims to provide training services to companies and to value the results of research at UNVI. Although the university has an important role in all this context, it was necessary to establish other entity closer to the market in order to make feasible INCI. The creation of the TTO is another example in this direction. The UNVI TTO was created in 2006 after the incubator was installed. Among the objectives of TTO are the identification of technologies and licensing in the UNVI as well as the promotion of innovation in the local enterprise sector using the available laboratories in UNVI. The TTO has active participation in several activities along with INCI. According to the TTO manager: "[...] everything that goes on in this house ... is always validated by both the TTO and the incubator." From this consensus between INCI and TTO, there is a natural approach where combined actions occur spontaneously, but they can also be understood as a logical sequence in which TTO seeks to empower the entrepreneur and INCI acts in the empowerment of the business idea materialized in a startup. There is also a consensus between INCI, TTO and other regional actors such as the City Council itself that maintains close contact with all.

4.1.3 Designing an ad hoc solution (innovation space)

The natural course would be for UNV1 researchers to develop technologies, the TTO provides the initial support, such as an eventual intellectual protection claim, and then refer them to INCI where this idea would be embodied in a business structure, a startup. In the context of UNV1, in addition to existing interface organizations, TTO has a network of teachers spread across all academic departments and laboratories to identify technologies and initiatives with entrepreneurial potential. The TTO has established a set of technological platforms that bring together multidisciplinary teams of professors and researchers to meet specific business sectors such as agri-food, sea, mobility, molds, high pressure, connected communities, and forest. The actions developed in these platforms contribute to the interaction with the productive sector and to the emergence of new companies.

INCI offers companies a three-stage incubation:

- Start: development support of prototypes, test, and launch of products in the market;
- Start up: marketing support, growth of the customer network and value proposition improvement;
- Start go: internationalization support, creation of new products and conquer new market segments.

Regarding the financing of its activities, INCI is self-sufficient. Startups pay for the services provided, for example, support in the elaboration of business plans, project submission for regional development programs, legal support. Participation in European fund projects to encourage entrepreneurship is frequent and significant for the maintenance of INCI operations. For example, in the Agency for Competitiveness and Innovation (IAPMEI) projects such as "Incubation Valley," "StartUP Voucher," "StartUP Visa" and "Tech Visa," INCI submits applications together with the startups. The INCI is embedded in a broader innovation space involving more actors such as the municipal councils of the region. This articulation allowed the creation of a network of 12 incubators that share the experience of INCI. Therefore, there are regional supports that directly and indirectly contribute to INCI. For example, the creation of a science park in the region is the result of a development strategy of the National Strategic Reference Framework (QREN) and the Portugal 2020 - both supported by European investment funds. Because INCI is headquartered in this science park, it also benefits from these broader incentive programs.

4.2 Incubator INC2

4.2.1 Recognizing a gap

Before the founding of INC2, an interface institution (INT2) was established between UNV2 and the business community in 1991. In addition to UNV2 itself, the municipal council and industrial associations also participated in the constitution. A total of six applied research laboratories were created to understand what future trends and how this could be made available through business services. The areas of operation of these laboratories are automation, materials, computer science, phytosanitary, electroanalysis, and geotechnics.

INT2 aims to promote the development of scientific and technological research, to discuss experiences and innovations introduced in the field of science and technology, to respond to requests from public or private entities or companies in the areas of scientific and technological innovation. Training activities and collaboration with institutions are also part of the set of actions of this interface institution. However, given the wide range of activities and their entrepreneurial potential, a new entity was created to deal specifically with stimulating entrepreneurship and creating new technology-based companies and advanced services. INC2 was established in 2002 by UNV2 and INT2. Thus, INC2 fulfills one of INT2's main strands

4.2.2 Bringing Triple Helix representatives together

Legally, the founders of INC2 are UNV2 and INT2. However, new members may be part as long as they can contribute to the achievement of INC2 objectives. Due to the proximity to INT2, there is the possibility of indirect connection with more than 40 associates. Even with the support and experience of the set of partners, there were operational difficulties in the beginning. According to the manager of INC2: "[...] sensitizing teachers 20 years ago to this reality was very difficult and therefore we also had to open the range and start working with projects that did not come from the academic sphere ... that is what we have until today ". Therefore, despite the initial intention to create new businesses from academic research, this was never an absolute rule. Another demonstration of advancement in consensus in the academic environment was the creation of the TTO in 2003. In addition to the natural partnership with INC2, TTO seeks to secure industrial property and evaluation of products resulting from research and development at UNV2.

In 2014 was inaugurated an accelerator of companies that also integrates this set of actors of promotion of the entrepreneurship. It was necessary to create a new association for the incubator due to bureaucratic issues for the construction of a building. It is as if the accelerator were a unit of INT2 and a stage following INC2. In 2014 the partnership between INC2 and the European Space Agency was also launched to support companies using space technology in industry and commerce as well as innovative solutions (space industry 4.0).

4.2.3 Designing an ad hoc solution (innovation space)

The performance of INT2 was significant not only for the initial step but influenced innovation space to the present day. In principle, it represents a link between what is developed at UNV2 and the business fabric. However, constant interaction with companies through their laboratories resulted in the creation of a TTO inside INT2 to value technologies, as well as to guide on industrial property and innovation management. Therefore, INT2 is very close to UNV2 but works almost independently.

This thriving and vigorous dynamic of INT2 shares space with a traditional stream of academic innovation. There is the understanding that TTO continues to promote entrepreneurship at UNV2 and to accompany the research development with innovative and commercial potential. From the moment a business plan has to be done, then INC2 comes on the scene. Since the automatic interaction with INC2, many events are organized together. An example of this is a consortium created to increase the technological intensity of the regional enterprise sector. UNV2 is a leader, and TTO is one of the coordinators of actions to be developed such as awareness and networking, identification of technologies and technological needs, valuation and marketing. The consolidation of this innovation ecosystem also involves institutions such as higher education entities, interface and incubation entities, and science and technology parks. Complementary eligible partners are municipalities, business associations and other entities that wish to cooperate to make the region more competitive. An example of the result of this initiative is the creation of an entrepreneurship support office in a municipality in the nearby. The person in charge of this office participated in an internship at INC2 for a few months to understand its internal operation to replicate in its municipality. The INC2 offers three modes of incubation:

- Physical: it offers a set of basic and specialized services, in addition to the occupation of one or more incubation modules. The spaces are between 20m² and 66m²;
- Virtual: services similar to Physical, but no exclusive space allocation. Projects in the pre-incubation phase start automatically in this modality. This modality can be for only three months (Start) or can be renewed continuously (Follow-up);
- Co-work: a shared workspace for the projects in the Virtual incubation Start. It has 24h access and availability for eight projects.

The accelerator has as main objective to meet the needs of companies in a more advanced stage, for example, investments and internationalization. In addition to the proximity of UNV2 and INT2 laboratories, INC2 also has a creative lab for prototyping and a studio for videos and pitches production. Through the provision of these services that INC2 has been developing, it is self-sufficient concerning finances. It is essential to highlight the participation in projects to foster entrepreneurship in the scope of Portugal 2020, QREN and the underway innovation ecosystem project.

Although innovation space already has an interaction with different actors, there is a connection to 10 other national networks (e.g., Tecparques, Inovcluster) and seven international networks (e.g., Uten, EBN). In 2007, incubators, associations and government entities created a network to promote incubation and entrepreneurship in the region. It currently has 18 incubators and has projects involving all these incubators and more than 500 incubated companies.

5 Discussion

The formation process in the analyzed cases (Table 2) has similarity to boundary spaces characteristics, despite the dynamic academic environment. The boundary spanner of INC1 was not precisely a single person but rather the interaction between UNV1 training activities and the enterprise sector. This evidence is in line with (Champenois & Etzkowitz, 2018) when they consider that a boundary spanner may have a more collective sense. The same applies to INC2 interacting with the enterprise sector, UNV2 and relevant participation of INT2.

Table 2 - Initial boundary spanner, the gap identified and activities for HAO creation.

	INC1	INC2
Initial boundary spanner	- UNV1; - Enterprise sector;	- UNV2; - INT2; - Enterprise sector;
Initial gap identified	- Enterprise training; - UNV1 research valorization and commercialization;	- Innovative solutions to industry; - Advanced applied research;
Initial boundary activities	- University-enterprise office created INC1 in 1996; - External organization created to manage INC1 in 1998; - UNV1 TTO was founded in 2006.	- INT2 was founded in 1991; - INT2 created INC2 in 2002; - UNV2 TTO was founded in 2003.

The identification of the gap and the first activities to establish the boundary space in INC1 obtained more significant interaction of the academic environment due to the lack of TTO in the UNV1 in the first 10 years of operation. In that period, INC1 also played as an interface between the research developed from UNV1 and the enterprise sector. In the case of INC2, this took place more naturally after 11 years of INT2 operation and your laboratories close to industry and enterprise sectors. After the constant interaction with companies through the provision of specialized services and advanced applied research, INC2 was created to direct efforts that were already happening in a scattered manner. The consensus was so evident that the following year, the UNV2 TTO was also created.

The three action levels for boundary spanners (Champenois & Etzkowitz, 2018) are present in both cases. The physical level is marked by the creation of new organizations with their teams that also obtained separate physical facilities. The social level has been most intense from the start in INC2 due to the vast array of INT2 established partnerships. However, since the creation of the UNV1 TTO, the technological platforms have brought great dynamism to the promotion of research results which also resulted in the creation of new companies in partnership with INC1. The mental level was a challenge for both cases. In the beginning, INC2 faced barriers from teachers and students and so had to seek entrepreneurs outside the academic environment. In both Universities, it was necessary to establish an internal network of agents promoting entrepreneurship, expanding the actions of the TTO and of the incubators so that messages and ideas reached as many people as possible.

It was clear that the performing of different organizations was very relevant to the consolidation of boundary spaces. This collaboration evidences the "Innovation organizer" mentioned by (Champenois & Etzkowitz, 2018). From the analysis of the innovation spaces in the cases, it was possible to perceive that the creation of a boundary space is probably just the beginning of a broader reaction. The coexistence with different models of Triple Helix occurs in multiple levels. In both cases, there was the establishment of networks with other incubators and institutions in order to share experiences or develop new projects. Figure 1 illustrates some of these boundary spaces interaction

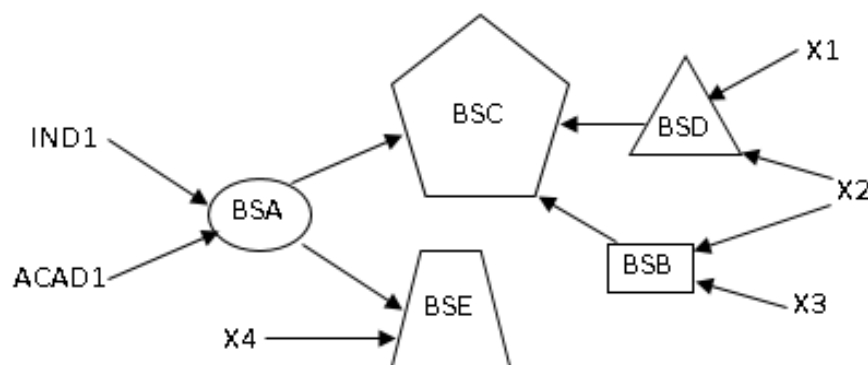


Figure 1. - Interaction between different entities and boundary spaces.

The boundary space A (BSA) is the result of the collaboration of entities IND1 and ACAD1. What happens next is that new entities (X1, X2, X3, X4) can add effort and create new boundary spaces (BSB, BSC, BSD, BSE). Like a chain reaction, interactions arise and may result in larger areas or new formats. This situation was made clear both at INC1 and INC2 when they established partnerships with national and international networks. The regional development projects promoted by Portugal 2020 and QREN end up fostering new boundary spaces that may exist only during the lifetime of the project or remain through stronger and consolidated links. Incubator networks can be represented as a broader boundary space (e.g., BSC), involving several boundary spaces from other incubators. This behavior shows the relevance of HAOs independence. If a reaction is creating new interaction areas, then this is only possible because organizations are independent. Even INC1 and INC2 with your close university connection, it was clear that this did not stop them from finding ways to consolidate your boundary spaces and create new ones with different entities. Therefore, the autonomy indicated by (Champenois & Etzkowitz, 2018) is also present in the cases analyzed here. Even from the financial point of view, both INC1 and INC2 are self-sufficient. This autonomy is likely to be a condition for the success of boundary spaces.

6 Conclusion

The steps related to the process of boundary space formation were verified in the TBIs from an academic context. The university connection did not hinder the discovery, consensus, and consolidation of a boundary space. However, the existence of well-established interface institutions in universities can be a condition for consolidating boundary space in this context. The autonomy of incubators was perceived as an important condition. The boundary spanner, in both cases, had a more collective sense, different entities cooperated. The steps do not happen in a linear sequence and are continually changing. If a consensus is not initially obtained, it does not mean that boundary space will not consolidate. It seems like the steps continually happening and adapting to the emergence of new partners. Despite the identified autonomy, the high participation in projects promoted by European Union funds has impacts on boundary spaces. Future research can verify if this autonomy is temporary or permanent.

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PARALLEL SESSION 15

RESEARCH OF MARKETING POTENTIAL OF UKRAINIAN STARTUP PROJECT

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Extended Abstract

Abstract

The main purpose of this work is to research of marketing potential of Ukrainian social startup project public restaurant «Urban Space» to choose and justify a marketing potential evaluation model that will have further application as well as setting recommendations based on it. The data was collected from official website «Urban Space» and from experts evaluation of marketing potential. To determine the marketing potential were chosen Batova and Krilova (2016) model. The level of the marketing potential of «Urban Space» within a general goal in 2017 was low (0.59). By 2018, was reached an average level of marketing potential (0.85). Based on the evaluation results of marketing potential within a specific goal, for implementation goal «increase of market share» the level of marketing potential is low (0.58), for implementation goal «customer retention» is an average level of marketing potential (0.63). Therefore, was recommend a number of factors for actively contributing of customer retention.

Keywords: Startup project, marketing potential, social startup, marketing potential of startup project.

1 Introduction

Theoretical and practical aspects of marketing potential of startups and the creation of prerequisites and factors for more effective use of marketing potential require a more detailed study. Managers especially need to pay attention to determine the marketing potential. Such potential can be found by analysing the current state of marketing potential and major trends of its changes. Application of complex indicators that would provide an adequate and overall assessment of marketing potential level have practical importance, as a basis for making recommendations for improvement of marketing activity.

The main purpose of this paper is to research a marketing potential to choose and justify a marketing potential evaluation model that will have further application as well as setting recommendations based on it. Also it is important to take into account the systemic nature of the marketing potential, the external and internal environment of its formation, the target orientation of the potential, the availability of the information to be obtained and the practical simplicity of the methodology used and visual presentation of the results of calculations. The object of conducted research was marketing activity of the Ukrainian social startup project public restaurant «Urban Space».

In the empirical part, the paper describes and analyses the data of expert's evaluation of marketing potential that carried out in dynamics in 2017 and 2018 years. The data was collected from official website and by sending a personal request to the public restaurant «Urban Space» for getting experts evaluation of marketing potential. The detail and expanded of marketing potential: marketing potential within a general goal, marketing potential within a specific goal, reserve marketing potential and maximum possible marketing potential. In the analysis, the reduction of individual indicators of marketing potential in integral. For this expert method, the weight of individual indicators was established. According to Batova and Krylova (2016) model, the evaluation scale of Ukrainian social startup project public restaurant «Urban Space» of marketing potential provides 3 levels: low (Index is from 0.0 to 0.6); average (Index is from 0.6 to 1.5) and high (Index is from 1.5 to 2.3).

This paper is divided into 3 main chapters. The first theoretical part included three sections. The first section concerns the essence, value and structure of marketing potential. The second section concerns the methodological approaches to assessing of marketing potential. The second chapter is a methodology's explanation, where the method of how the marketing potential was evaluated and database was formed is shown in three subgroups. Finally, the last part of the study illustrates the analysis and empirical results of the given study. All the results are summarized in the conclusion part of paper, which presents the most important findings of this work.

2 Literature Review

According to Balabanova and Mazhinsky (2014) the interest to the category of company potential was appeared at 1970's - 1980's. After was published works that contained various aspects of the concept definition of potential. There was a discrepancy in the interpretation of the potential definition, structure and relation with other categories. Marketing potential is a relatively new economic category. However, a small theoretical foundation for interpreting and evaluating has already been established. Marketing potential is one of the most important concepts of the modern marketing, because of most effective use of this category, company will be able to determine current status, to identify hidden reserves and develop effective strategies for future development. Gulyaev (2001) proposed a complete potential composition of a small enterprise: general management, financial management, production, research and development activities, personnel, culture of relations and marketing. The author did not detail the structure of marketing potential. The concept of marketing potential in the scientific literature was recently relatively appeared. It should be noted that now, as well as for the concept of the company's potential, not provided clear and clear dismissal of the structure of marketing potential and its essence. Lysenko (2010) was highlighted that the maximal possible using of marketing potential is a strategic task of enterprises. However, very often modern company do not fully use their marketing potential, or even do not use of it. Actually, the essence of marketing potential concept until now are incompletely disclosed. The concept of marketing potential according to Batova and Krylova (2016) is one of the most ambiguously interpreted concepts, it is very important to identify the elements of structure and the links that arise between them. This will allow comprehending the process of formation and implementation structure of marketing potential, which has great scientific and practical importance.

In modern conditions, a lot of companies do not fully use marketing potential, because of lack of understanding of its role and the need to develop an effective mechanism for managing of marketing potential, the evaluation possibility in order to maximize the satisfaction of users groups, to formation of strategic directions of activity (Oliynyk & Ivanenko, 2016). According to Batova and Krilova (2016), marketing potential of enterprise represents a certain function of resources, reserves, abilities for use and opportunities of the environment. Determined by the objectives of marketing activities, factors of uncertainty of external environment, risks and synergy effect. The assessment of the marketing potential in the framework of developed method involves need to determine the level of the investigated potential, as aggregate of its forming elements, from the position of the target oriented marketing potential and accounting for trends related to risk assessment and synergy. In consequence of the formation of effective system of marketing potential, company have competitive advantages, therefore it is expedient to determine the scientific approaches to study its (Romanova, 2015). According to Batova and Krylova (2016) methodology should take into account the systemic character, the external and internal environment of formation of the potential, the target direction, and also are availability of necessary information and easily for practical application. Therefore, this model was chosen for application in this paper. To determine marketing potential, will used an additive-multiplicative for calculation of polygon area and constructed based on the values of complex potential indicators

3 Research Methodologies

3.1 Objectives of study and description of data collection

The main objective of this study is the selection of an evaluation model of the marketing potential of Ukrainian startup project public restaurant Urban Space, propose recommendations for their solution and the subsequent application of it for the evaluation of Ukrainian startup projects.

For the comprehensive diagnostics of marketing potential of Ukrainian social startup project was chosen - the public restaurant «Urban Space», the data was collected from the official website «Urban Space 100 ». Evaluation of marketing potential of the public restaurant were carried out in dynamics for 2017 and 2018 years. Before proceeding the assessment, was formed a working group with four experts. During the period of April, was sent a personal request for getting information about general state and marketing activity of social startup project. Four experts of company evaluated the marketing potential of the startup project. An expert assessment was based on filled a questionnaire cards.

3.2 Description of Data Analysis

The Batova and Krilova (2016) model were chosen for evaluation the level of marketing potential. The main idea of this methodology is the interpretation of the quantitative assessment of the marketing potential in a geometric figure polygon. In according to the analysis, for reduction of individual indicators of marketing potential change into one - integral. For expert evaluation method, the weight of individual indicators was established. To determine the marketing potential of additive-multiplicative model used calculation of the area of a polygon that are constructed based on the values of complex potential indicators. As a comprehensive assessment indicator of marketing potential are: resource subsystem, reserve subsystem, abilities subsystem, capabilities subsystem, management subsystem, and synergy. It also necessary to consider the probability of manifestation of factors of the uncertainty of the external environment in the form of risks. Also detailed and expanded marketing potential: marketing potential within a general goal, marketing potential within a specific goal, reserve marketing potential and maximum possible marketing potential.

The quantitative assessment of resources subsystem of marketing potential involves the calculation of several types of indicators (absolute, relative, quantitative and qualitative) for 12 types of resources, that are bringing the individual indicators to a single scale of measurement from 0 to 1, which are separate and independent study. For their evaluation, it was used the method of expert assessments. Each individual indicator is evaluated based on an expert survey in points from 0 to 1. An expert assessment based on filled questionnaire by certain types of resources of the marketing department - high, average or low. Equations for calculating of complex indicators of marketing potential, the weight factors of the individual indicators and the group indicator are presented in Table 1.

Table 1. Equations for calculating of complex of marketing potential indicators (Adapted from Batova and Krilova (2016, pp. 92-120).)

Indicator	Equation	Marketing
P_1 - a comprehensive indicator of security of marketing resources	$P_1 = \frac{\sum_{i=1}^n r_i \alpha_i}{n}$	r_i - i-t unit indicator of marketing resource availability; α_i - magnitude of the i-n unit index; n - number of units that participate in the evaluation (in this case, n = 12)
P_2 - a complex indicator of the development of marketing abilities of employees	$P_2 = \frac{\sum_{i=1}^n c_i \alpha_i}{n}$	c_i - the i-t unit indicator of development of marketing abilities of employees; α_i - the magnitude of the i-th unit index; n - number of units that participate in the evaluation (in this case, n = 8)
P_3 - a complex indicator of attractive marketing capability	$P_3 = \frac{\sum_{i=1}^n v_i \alpha_i}{n}$	v_i - the i-t unit indicator of probability of realization of the possibility; α_i - the magnitude of the i-t unit index; n - number of units that participate in the assessment
P_4 - a complex indicator of marketing management potential	$P_4 = \sum_{i=1}^n y_i \alpha_i$	y_i - i-t group indicator of marketing potential management; α_i - weight of the i-t group index; n - number of group indicators involved in the assessment (in this case, n = 3)
K_R - decreasing coefficient of change of the marketing potential	$K_R = 1 - \prod_{i=1}^n g_i$	g_i - probability of occurrence of the i-t type of risk; n - number of individual indicators involved in the assessment (in this case, n = 4)
S - comprehensive indicator of the level of synergy	$S = \sum_{i=1}^n S_i \alpha_i$	S_i - i-t group indicator of the level of synergy; α_i - weight of the i-t group indicator; n - number of group indicators involved in the assessment (in this case, n = 4)
α_i - weight factors of the individual indicators of availability of resources of marketing	$\alpha_i = \frac{\sum_{j=1}^m f_{ji}}{\sum_{j=1}^m \sum_{i=1}^n f_{ji}}$	$\sum_{j=1}^m f_{ji}$ - the sum of ranks, with by all experts on the i-t indicator; $\sum_{j=1}^m \sum_{i=1}^n f_{ji}$ - the sum of the rank assigned by all experts on all indicators.
y_1 - a group performance indicator of the main functions of the marketing department	$y_1 = \sum_{i=1}^n x_i \alpha_i$	x_i - the i-t unit indicator of the quality performance of the main functions of the marketing department; α_i - the magnitude of the i-t unit index; n - number of units that participate in the assessment (in this case, n = 14).
y_2 - a group indicator of rationality of the organizational structure of the marketing department	$y_2 = \sum_{i=1}^n o_i \alpha_i$	o_i - the i-th unit indicator of rationality organizational structure of the marketing department; α_i - weight of the i-th single indicator; n is the number of individual indicators involved in the assessment (in this case, n = 7).
y_3 - a group indicator of personal qualities of employees of the marketing department in the field of management	$y_3 = \sum_{i=1}^n l_i \alpha_i$	l_i - the i-t single indicator of personal qualities of employees of the marketing department in the field of management; α_i - weight of the i-t single indicator; n is the number of units by indicators involved in the assessment (in this case, n = 10).

To determine the level of the marketing potential according to additive-multiplicative model used the calculation of polygon area, that are built based on the values of complex indicators. The rules in according to which a polygon is constructed for a company are presented in Table 2. The calculation of the polygon area characterizes the real result of the assessment of the marketing potential that is a value of this indicator determines its quantitative assessment.

Table 2. Rules for building of marketing potential polygon (Batova and Krilova (2016, p. 121))

Rules	Characteristic
Number of vectors = Number of complex indicators	From one point are vectors, the number of which is equal to the number of selected complex indicators characterizing the marketing potential of the enterprise
Determining the angle between vectors	The angle α between the vectors is the same and is calculated as follows: $\alpha = \frac{360^\circ}{\text{Number of complex indicators}}$
Fixing the reduced values	On each vector, the reduced value of the corresponding complex indicator from 0 to 1 is postponed.
Dumping points in a polygon	The resulting points, corresponding to the value of complex indicators, connect, and a polygon is obtained.

4 Discussion and Results

Marketing potential is an integral part of general company potential, ensuring its constant competitiveness, economic and social demand for goods / services on the market, thanks to effective marketing activities. In order to improve marketing activities, market orientation, obtaining opportunities to attract additional consumers and investments, it is necessary to assess the marketing potential, as well as to manage it in a targeted and timely manner.

Complex diagnostics of marketing potential will be carried out for Ukrainian social startup project public restaurant «Urban Space». Evaluation of the marketing potential of the social restaurant will be carried out in dynamics, to determine the level of the marketing potential for 2017 and 2018 years. Before proceeding of evaluation, a working group of four experts was formed.

First of all, evaluate marketing potential of a public restaurant «Urban Space» within the framework of a general goal, that is, the implementation of marketing activities in general. For this, was quantify the complex indicators: resources subsystem, abilities subsystem, capabilities subsystem, management subsystem, synergy and risks. Based on a comprehensive assessment it possible to implement following indicators of the integrated indicators of marketing potential. In Table 3 presents calculated values of the complex indicators of the marketing potential of public restaurant «Urban Space» in 2017 and 2018 years.

Table 3. Estimated values of integrated indicators of marketing potential within a specific goal, 2017-2018.

Year	Resources Subsystem P1	Ability subsystem P2	Possibilities Subsystem P3	Management subsystem P4	Synergy S	Risks
MP 2017	0.64	0.48	0.63	0.46	0.41	0.91
MP 2018	0.67	0.68	0.82	0.55	0.42	0.90

Define the quantitative assessment of the marketing potential of the restaurant in the dynamics:

$$MP_{O2017} = \frac{1}{2} \sin(72^\circ) (0.64 * 0.48 + 0.48 * 0.63 + 0.63 * 0.46 + 0.46 * 0.41 + \\ + 0.41 * 0.64) * 0.91 = 0.59;$$

$$MP_{O2018} = \frac{1}{2} \sin(72^\circ) (0.67 * 0.68 + 0.68 * 0.82 + 0.82 * 0.55 + 0.55 * 0.42 + \\ + 0.42 * 0.67) * 0.90 = 0.85$$

Thus, according to calculations above, the level of marketing potential of social startup project public restaurant «Urban Space» for 2017 can be characterized as low (0.59). In most of the subsystems of the investigated potential there are infractions: problems with the provision of the marketing department with the necessary management, low development of the abilities that are necessary for carrying out marketing activities in general, and also a very low degree of synergy between subsystems. However, all of this cannot to affect importantly on the effectiveness of marketing activities and to achievement of the target goals of the restaurant.

By 2018 year, public restaurant reached an average level of marketing potential. It was achieved by the way of increase development of the abilities and possibilities that are necessary for carrying out marketing activities in general, the positive dynamics of indicator with the provision of the marketing department with the necessary resources.

Analysing the calculations below, can conclude, that for realization of the second goal - increasing of market share - the public restaurant has a low level of marketing potential (0.58). This indicates with problems of provision of marketing department with the necessary resources, weak development of abilities, low quality of potential management system and a low degree of synergy between all subsystems. These negative trends indicate the impossibility of achieving the goal, or small prospects for its effective implementation. For implementation of the first goal - customer retention - public restaurant has an average level of marketing potential.

Table 4. Estimated values of integrated indicators of marketing potential within a specific goal, 2017-2018

Year	Resources Subsystem P1	Ability subsystem P2	Possibilities Subsystem P3	Management subsystem P4	Synergy S	Risks
Customer retention	0.62	0.57	0.74	0.46	0.43	0.83
of Increase market share	0.52	0.53	0.81	0.44	0.37	0.86

Define the quantitative assessment of the marketing potential of the restaurant in the dynamics:

$$MP_{K1} = \frac{1}{2} \sin(72^\circ) (0.62 * 0.57 + 0.57 * 0.74 + 0.74 * 0.46 + 0.46 * 0.43 + 0.43 * \\ * 0.62) * 0.83 = 0.63;$$

$$MP_{K2} = \frac{1}{2} \sin(72^\circ) (0.52 * 0.53 + 0.53 * 0.81 + 0.81 * 0.44 + 0.44 * 0.37 + 0.37 * \\ * 0.52) * 0.86 = 0.58;$$

4 Conclusions

Research of marketing potential is a prerequisite for the effective marketing functioning of the company. There is a significant amount of theoretical work of this issue. However, most of them are not implemented and not verified. It should be noted, that Ukrainian startup projects pay not enough attention to research marketing potential and its evaluation.

In the paper does not assess the subsystems of reserves, which determine the practical reserve marketing potential at the moment is not possible. These concept is introduced to the purpose of a comprehensive analysis of considered potential and also to formation of a targeted idea of the marketing potential. The introduction of the reserve marketing potential is ensured by the instability of the external environment, which is an inappropriate attribute of the development of marketing potential. In this regard, it is important for marketing department has a certain amount of resources that are in the reserves and not purchased in the marketing activities. This reserve can be used for adapting the marketing approach to possible changes on the market and for reproducing systems in optimal structural proportions in the long run period. Thus, the methodology for evaluating the reserves subsystems is actual scientific and practical task, and represents a direction for further research.

The implementation of the methodology based on Ukrainian social startup project public restaurant «Urban Space». The assessment was carried out in dynamics, the level of marketing potential determined for 2017 and 2018 years. Evaluated marketing potential within a general goal, marketing activities in general. For this, the quantitative

assessment of complex indicators was given: resources subsystem, abilities subsystem, capabilities subsystem, management subsystem, synergy and risks.

The level of the marketing potential of startup project in 2017 was characterized as low (0.59). In most of the subsystems of the investigated potential were: problems with the provision of the marketing department with the necessary resources, poor development of the abilities necessary for carrying out marketing activities in general, as well as a very low degree of synergy between subsystems.

By 2018, the public restaurant «Urban Space» reached an average level of marketing potential (0.85). Were concluded that, marketing department in general, functions quite successfully, however, not afford to realize of all opportunities provided by the external environment and not achievement of all goals. The marketing department has some difficulties in terms of insufficient resources and the degree of development of abilities, as well as a low degree of synergy between the subsystems.

Based on the evaluation results of marketing potential within a specific goal, for implementation goal «increase of market share» public restaurant has a low level of marketing potential (0.58), for implementation goal «customer retention» public restaurant has an average level of marketing potential (0.63), Therefore was recommend a number of factors for actively contributing of customer retention. Thus, the results of this study identify certain existing and related problems in the theory and practice of research and assessment of marketing potential, which can become directions for future research.

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PARALLEL SESSIONS 15

GLOBAL COMPETITIVENESS INDEX VS. GLOBAL ENTREPRENEURSHIP INDEX: A COMPARATIVE ANALYSIS AT THE INTERNATIONAL SCALE

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Extended Abstract

Abstract

The global competitiveness of countries is recognised as being impacted by several social, economic and cultural factors. Entrepreneurship is recognised for generating economic growth through the introduction of innovations in the market. In this perspective, this paper aims to analyse the relationship between entrepreneurship and competitiveness using cluster analysis and Pearson's correlation coefficient, based on the data and variables of the Global Competitiveness Index and the Global Entrepreneurship Index. The results show that the countries studied are in contexts that influence competitiveness and entrepreneurship in a similar way, and that the variables that drives the competitiveness influence entrepreneurship and vice versa.

Keywords: Global Competitiveness Index; Global Entrepreneurship Index; Clusters; Development.

1 Introduction

It is natural for countries the efforts to achieve its people's welfare and standard lifting life. To achieve these goals, several variables must be worked together, considering social, economic, and cultural, among others. The proper functioning of these various factors and a positive relationship between them provides results in the form of economic development. Overall, the most competitive countries achieve these results. In this scenario, the phenomena of entrepreneurship and innovation stand out, since the role of the entrepreneur is fundamental in the introduction of innovations in the market and consequently in the generation of economic development (Schumpeter, 1997).

The next point is about the review of the literature related to the themes of competitiveness and entrepreneurship. Next, in point 3, the study objective, research hypothesis and methodological procedures are presented. In point 4 the results are presented and discussed, and finally in point 5 the main conclusions are described.

2 Literature Review

The concept of competitiveness has several approaches in the literature, starting from the microeconomic to the macroeconomic context. Aiginger and Firgo (2015) understand that competitiveness originates at the business level, but it is also influenced by economic policy and by the conditions of the economic factors in question. Among the most recent approaches, those that take into account social, economic and cultural factors predominate, giving a more complex character to the phenomenon of competitiveness.

In the macroeconomic perspective, competitiveness involves the ability to create well-being (Aiginger, 2006) and the ability to achieve goals beyond Gross Domestic Product (GDP) for its citizens in terms of income, social and ecological aspects (Aiginger, Bärenthaler-Sieber, & Vogel, 2013). The World Economic Forum (WEF) defines competitiveness as the “set of institutions, policies, and factors that determine the level of productivity of an economy, which in turn sets the level of prosperity that the country can earn.” (2015, p. 4). According to the organization, competitiveness contributes to higher living standards and generates the resources needed for broader societal goals.

For Schumpeter (1997), the essence of economic development is in the creation of new combinations that disturb the equilibrium of the market forces hitherto established. Therefore, innovation is an essential factor for the competitive context. In addition to being an opportunity for growth and survival for organizations, it offers a chance to influence the context in which it is inserted by promoting the redefinition of government practices and philanthropy (Davila, Epstein, & Shelton, 2007). Understanding the process of competitiveness means analysing in depth the quantity, quality and conditions of the process inputs, highlighting the analysis of institutions, production, dynamics and diffusion of innovation in the environmental context (Aiginger, 2006).

The entrepreneurs, through the creation of new products, new methods of production, new sources of raw materials, and new forms of organization and exploration of new markets are responsible for triggering economic development (Schumpeter, 1997). The value of entrepreneurs is notorious at the community level, where successful new businesses tend to create new jobs, increase incomes and generate wealth, and connect the community to the global economy, and at the national level, where more entrepreneurial activity have stronger GDP growth (Henderson, 2002). When talking about entrepreneurship, we talk about job creation and growth through innovation (GEDI, 2018), since it is a social process in which an individual or group of individuals, using exclusive resources and the exploitation of opportunities in a given context, creates wealth (Ireland, Hitt, Camp, & Sexton, 2001).

Economic growth, innovation and entrepreneurship are variables that exert positive effects on one another in a virtuous circular effect. The greater the activity of entrepreneurship and innovation, the greater the economic activity, just as in the same way this has positive effects on the activities of entrepreneurship and innovation. The absence of impediments to this virtuous circle would create benefits for the nation in the form of higher levels of employment, well-being, and income distribution. High levels of economic activity create new business opportunities, encouraging entrepreneurs' interest in accessing new markets and supplying products with a greater degree of competitiveness (Galindo, & Méndez, 2014). Cultural differences are important in explaining the behavioural difference of entrepreneurs and therefore economic policies must be directed to balancing these differences and preparing the actors for entrepreneurship. Institutional support for entrepreneurship policies is fundamental to cover up market inadequacies and provide financial and human resources to foster entrepreneurial activity, especially in less mature markets (Porfírio, Carrilho, & Mónico, 2016).

Acs (2006) states that the economic development of a nation originates from the combination of successful entrepreneurship and the strength of established corporations. The benefits are verified through the variation of national income, reflected in GDP per capita. In countries with low national income, entrepreneurship as self-employment offers job opportunities and conditions for creating markets. With the increase in national income, new technologies emerge and economies of scale allow larger organizations to establish themselves and increase their role in the market. At the same time, the number of new businesses is decreasing in the face of the growing number of people finding a stable job.

Finally, “as further increases in income are experienced, the role played by the entrepreneurial sector increases again, as more individuals have the resources to go into business for themselves in a business environment that allows the exploitation of opportunities” (Acs, 2006, p 104). In this way, entrepreneurship has different challenges according to the state of economic development of the country, which requires the use of different incentive policies, (Acs, 2006).

3 Research Methodologies

3.1 Study Objective and Research Hypothesis

In order to understand the relationship between entrepreneurship and competitiveness as drivers of economic development, and therefore as ways to reach higher levels of income and well-being of a nation, this paper proposes the analysis of the GCI and the GEI, observing the behaviour of the factors that impact the countries around the world in terms of entrepreneurship and competitiveness. In order to contribute to this study objective, the following research hypothesis was also proposed:

H1: There is a relationship between entrepreneurship and competitiveness at the international level.

The data used to calculate the indices “are useful in providing basic information on the economic, social, political, general business environment and market conditions in a specific country or geographical area” (Craig & Douglas, 2000, p. 39). The GCI was developed by the World Economic Forum with the aim of providing conditions to chart a path to growth, focusing on 12 important pillars for competitiveness, such as Institutions, Infrastructure, ICT Adoption, Macroeconomic Stability, Health, Skills, Product Market, Labour Market, Financial System, Market Size, Business Dynamism and Innovation Capability. 140 countries are analysed and classified according to the GCI.

The GEI was developed by the Global Entrepreneurship and Development Institute, with the purpose of capturing the multidimensional and dynamic characteristics of the context of entrepreneurship, in order to observe quantitative and qualitative differences, incorporating variables of individual and institutional level. The GCI calculation is carried out in 137 countries and is structured in 14 pillars considered important for entrepreneurship, being Opportunity Perception, Start-up Skills, Risk Acceptance, Networking, Cultural Support, Opportunity Start-up, Technology Absorption, Human Capital, Competition, Product Innovation, Process Innovation, High Growth, Internationalization and Risk Capital.

Based on the pillars that influence each of the indices, it is intended to observe relations and differences between them, in addition, it is intended to verify the existence of groups of countries with similar characteristics.

3.2 Description of Data Analysis

In order to respond to the objective of the study, in addition to the use of an exploratory analysis of descriptive statistics, the multivariate statistical technique cluster analysis was used. In this context, its purpose is to create homogeneous groups of countries with similar characteristics based on data from the GEI and the GCI.

Cluster analysis should be used when the researcher wants to verify the existence of similar behaviours between observations in relation to certain variables and at the end of the study determine groups, called clusters, with homogeneous internal characteristics (Fávero, & Belfiore, 2017).

A cluster analysis was performed for the GCI dataset using its 12 pillars as variables, and another analysis was performed for the GEI data based on its 14 pillars, also used as variables. The two databases refer to the year 2018. The clustering method defined for these clusters analysis was the Ward method which is hierarchical, because it allows the identification of the ordering and the allocation of observations, so that the researcher is able to study, evaluate and decide, based in the literature or in some rule, the number of clusters to consider in the study. Ward method is also agglomerative since larger groupings are formed at each stage of agglomeration through the addition of new observations or groups (Fávero, & Belfiore, 2017). In this method, the decision of which pair of groupings to combine is based on which combination minimizes the internal sum of squares in the complete set of separate or disjoint groupings. The quadratic Euclidean distance was used as dissimilarity distance, since it is recommended when Ward's method is used (Hair et al., 2009). To define de optimal number of clusters the criterion of the coefficient of determination (r^2) was used, which reflects the percentage measure of total variability that is retained in each of the resulting solutions.

The clusters resulting from the two clusters analyses were characterised based on the centrality indicator of the distribution – the mean – and the variability indicators of the same distribution – minimum and maximum values and standard deviation. Then the analysis of the two groups was performed in order to compare them with the variables that make up the indices.

In order to answer the research hypothesis, the Pearson correlation coefficient was calculated, which allows to verify the strength of association between two variables analysed from their results, which vary from -1 to 1 (Fávero, & Belfiore, 2017). The calculation was performed by correlating the GCI and GEI variables with each other.

4 Discussion and Results

The first analysis and clusters, based on GCI data, resulted in the formation of two clusters. The first cluster is characterised by being the cluster of countries with high level of competitiveness, formed by the 36 countries that occupy the 36 first positions in the ranking of GCI countries. This cluster has higher averages for all variables compared to the average of the 140 countries that are part of GCI, and present more stable economies, with a healthier population prepared in terms of skills and expertise to contribute to productivity, providing the necessary conditions for modern economic activity through a well-developed infrastructure and financial system. The second cluster is formed by the other 104 countries that compose the GCI, ranked from the 38th position in the index ranking. This cluster is characterised by being composed by countries with a low level of competitiveness because it presents low averages for the variables analysed, suggesting that there is still a long way to go in terms of factors that drives global competitiveness.

The variables Innovation Capability and ICT Adoption are fundamental to explain the difference between the clusters formed. The mean of the cluster composed by countries with a high level of competitiveness for the two variables differ by 51% and 40.5% of the second cluster, respectively. These averages differ the most if we analyse the 12 variables. Together, Innovation Capability and ICT Adoption are capable of fostering efficiency and fostering innovation for economic progress.

The second cluster analysis performed from the GEI data also resulted in the formation of two clusters. The first cluster identified is made up of 55 countries, all of which are among the 65 first places in the GEI ranking, so they are characterized as countries with high level of entrepreneurship, where there is good business opportunities and population is prepared to perceive these opportunities, marked by the high use of technology and offering good financing conditions, with companies focused on creating innovative products and internationalization. The second cluster is characterized by countries with a low level of entrepreneurship, being composed of 82 countries that occupy from the 50th position of the GEI ranking, marked by very low scores for all variables. The average of the variables in the first cluster more than double in relation to the second cluster. Clusters are distinguished mainly in terms of risk acceptance, technological absorption at the corporate level, investment in applied research aimed at process innovations, internationalization of companies and investment in venture capital.

By comparing the clusters formed through the analysis of clusters performed for the GCI and GEI data sets, it is possible to verify a certain similarity between the countries that make up the cluster of countries with a high level of competitiveness and the cluster countries with a high level of entrepreneurship, as there is similarity between the cluster of countries with low level of competitiveness and the cluster of countries with low level of entrepreneurship. The first cluster of GCI has 36 countries while the first cluster of GEI has 55, of these, 33 countries are the same. At the same time, the second cluster of the GCI has 104 countries and the second cluster of the GEI has 82, of which 73 countries are the same. Whereas 127 countries are common between the two databases, it can be said that 106 countries, or 83,5% of the countries analysed, have similar levels of entrepreneurship and competitiveness, thus suggesting the relationship between factors that impact entrepreneurship and competitiveness of countries at international level.

The analysis of the Pearson correlation coefficient between GCI and GEI and its variables revealed a high correlation of 0.908 between the two indices, accompanied by positive cross-correlations between all variables of the two indices, showing a great interaction between the variables that influence the entrepreneurship and competitiveness. The GCI showed high correlations with the variables Risk Acceptance, Opportunity Start-up and Processes Innovation of GEI, suggesting that the economy with controlled risk, taxation and satisfactory government services, with investments in research and development, coupled with a population willing to take risks exploiting business opportunities and using new technologies. In addition to having a context that encourages entrepreneurship, boosts competitiveness through these factors. Already the GEI revealed high correlations with the variables Institutions, Infrastructure, Financial System, Business Dynamism and Innovation Capability of GCI, revealing that these aspects as well as contribute to the competitiveness of a country, encourage entrepreneurship context through institutions which regulate economic activity, well-developed financial systems and infrastructure, an innovative and resilient private sector, and the ability to generate innovative ideas and new business models that are widely considered the engines of economic growth.

5 Conclusions

This work was intended to verify the relationship between entrepreneurship and competitiveness, since the former is known to foster competitiveness through entrepreneurs, who by introducing innovations in the market, drive economic growth and global competitiveness. The analyses of the GEI and the GCI allowed us to observe the factors that condition and drive each phenomenon. The similarity between the groups formed reveals that countries around the world find themselves in contexts that influence entrepreneurship and competitiveness in a similar way. A country that creates conditions for entrepreneurship, fostering the perception of opportunities as well as risk taking, also creates the conditions to encourage competitiveness at a global level. At the same time, strengthening institutions, financial and business systems, and good infrastructure conditions, as well as contributing to international competitiveness, foster entrepreneurship in the country.

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Vítor Braga & Marisa Roriz Ferreira

Chair and Co-Chair of the Organizing Committee



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